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THE UNIVERSITY OF ALBERTA
HUMAN RESOURCE ACCOUNTING: A CRITICAL ANALYSIS

by



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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Human Resource Accounting: A Critical Analysis", submitted by Rodney John Coutts in partial fulfilment of the requirements for the degree of Master of Business Administration.

ABSTRACT

Current accounting practice indicates that the human component of an organization is assumed to benefit current operations only. In recent years, some accountants have followed the lead of economists in questioning the validity of this assumption. This thesis explores the legitimacy of an alternative treatment of the firm's human input, reviews alternative measurement methods, and investigates potential implementation problems. It concludes with recommended priorities for future action with respect to the human resource measurement problem.

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CHAPTER I

INTRODUCTION

Company annual reports represent the major vehicle for acquainting the outside world with the results of the activities of a business organization. It is not unusual for the company president, in his prefacing letter to shareholders, to proclaim that ". . . our employees are our most important and valuable asset". However, a glance at the financial statements will reveal that employees are not numbered among the assets of the organization. Further examination will reveal that all expenditures on employees are treated as current operating expenses. This treatment indicates that a firm's personnel is assumed to benefit current operations only.

This study takes issue with this assumption. In essence, it examines the possibility of an alternative treatment of the organization's human component.

THE PROBLEM

The problem investigated in this study has three related facets. First, if an alternative treatment of the organization's human input is to be justified, then it must indeed be established that employees represent assets, i.e., that they have the potential to benefit future operations. Related to this part is the question of whether an alternative treatment will make a difference to anyone, including those using the (new) information and those who are subject to the new treatment.

The second facet is dependent on the first. If it is established

that employees do represent assets, then a way must be found to reliably measure their future service potential.

The third facet, in turn, is dependent on the second. Even if a valid method of measurement is found, it must be feasible to implement that technique in an organization.

In sum, this study addresses the problem of "how to properly account for an organization's human component".

OBJECTIVES

The objectives of the study are:

1. To examine the economic concept of "human capital" and the accounting concept of "human assets", including theoretical arguments for and against the existence of such property.
2. To present the normative definition of the value of an individual to an organization.
3. To review the theoretical arguments related to the assumed usefulness of human resource measurement in organizations.
4. To present and analyze the methods suggested in the literature for measuring the value of human assets.
5. To examine the issues following the implementation of measurement methods, including the behavioural impact, the actual usefulness of the data, and the benefit-cost question.

SCOPE AND LIMITATIONS

The main emphasis in this study is to review and critically analyze what has been done with respect to the human resource measurement problem in organizations. No attempt is made to posit a new

measurement technique.

In addition, the study is concerned primarily with the implications of human resource measurement in the context of the business organization. Although much of the analysis may well be extended to not-for-profit institutions, the inferences for such organizations are beyond the scope of the study.

The broadest possible view of the firm's human resources may include all people, both internal and external to the organization, who influence its value. Customer goodwill, for example, may comprise an important part of this all-inclusive view. This study, however, is primarily concerned with the measurement of the firm's internal members.

Finally, although the study is intended to contribute to accounting theory and practice, it draws quite heavily on economic and behavioural science concepts. This is so because the economic concept of "human capital" is strongly related to the accounting notion of "human assets", and because of the potential of the behavioural sciences to provide a useful perspective to the measurement problem.

METHODOLOGY AND ORGANIZATION

The objectives of this study are accomplished through library research of relevant material in accounting, economics, and the behavioural sciences. Chapter II reviews the evolution in economic thinking about the concept of human capital. It also includes the normative definition of human capital value from several viewpoints, including that of the organization. Chapter III focuses on the accounting concept of human assets, including the assumed usefulness of related data. Measurement methods, both dollar and non-dollar, are analyzed in Chapters IV and V. Chapter VI conjectures on some of the

issues following implementation of measurement techniques. Chapter VII is a summary which includes suggested priorities for future action.

CHAPTER II

THE ECONOMIC CONCEPT OF HUMAN CAPITAL

INTRODUCTION

The objective of this section is to provide an economic background to the study. A brief outline of the evolution in economic thinking about the concept of human capital is presented, including current arguments both for and against the legitimacy and utility of the concept in economic analysis. Finally, to set the stage for consideration of the individual as capital in an accounting context, the definition of human capital value is considered. The latter may be seen from the point of view of "society", the individual himself, of the organization which employs him.

THE ECONOMIC DUALITY OF THE INDIVIDUAL

The economist looks at the individual from two viewpoints. He is both a consumer and producer of goods and services. To analyze man as a producer, some method must be found to measure his productive abilities. The idea of human capital can be introduced into economic analysis to provide such a measure. Human capital may be defined as the capacity of an individual to produce goods and services through his skills, talents and knowledge. It is measured in terms of the value of goods and services produced. Put another way, since consumption is the ultimate goal of our economic system, this value is the same as the value of the consumption goods and services which he eventually produces, either directly or indirectly.

While it is clear that the production and consumption activities

of the individual are not mutually exclusive categories, economic analysis is facilitated by taking this dual view of man. Our concern here is with man as a producer, and the ways in which his productive capabilities can be augmented through investment.

HUMAN CAPITAL PRIOR TO CIRCA 1960

In economic literature, the quantity and quality of labour was always regarded as an important production factor. However, investment in the formation of human capital - such as spending on education, on-the-job training, health and migration - received comparatively little attention. The major reason for this was that labour was treated as a homogenous commodity. Only physical machines could lead to increased output. Adam Smith was one of the major proponents of this view.¹ He supposed that there would always be surplus labour available and that physical capital formation would sustain population growth as it supplied labourers with the necessary subsistence.² Smith saw only non-market benefits in human capital investment, such as a more alert and self-reliant citizenry through increased public education.³

Though taking a different perspective, Karl Marx also de-emphasized the importance of human capital.⁴ He viewed the modernization of physical capital as the fundamental function of capital

¹Adam Smith; The Wealth of Nations, Vol. 11 (Edinburgh: A. Strahan and T. Cadell, 1819).

²Ibid., p.102.

³Ibid., p.1.

⁴Karl Marx; Das Capital, (New York: Modern Library Edition, Random House, 1936).

formation. Investment is viewed as a process of labour substitution in which better "machines" replaced labour.⁵ In the long run, human capital was unnecessary for production.

Possibly in reaction against Marx's use (or misuse) of the labour theory of value, classical economists did not give the same special attention to labour as did the socialist schools of thought. In classical thought, labour is a homogenous quantity with given qualities, and, as such, a passive instrument which will be employed only if there is a sufficient level of tangible investment.⁶

Several influential economists were clearly aware of the importance of human capital,⁷ but little or no attempt was made to incorporate the concept into economic analysis. The reason apparently stems from the lack of interest in economic growth. In Thurow's words:

Attaining full employment and eliminating business cycles were the fundamental economic problems. Income redistribution was considered, but only direct transfers (rather than a redistribution of human capital) were discussed.⁸

In addition, several deep-rooted moral and philosophical objections to the idea of human capital were felt:⁹

⁵Ibid., p.570.

⁶J. S. Terreblanche, "The Relative Contribution of Tangible and Human Capital Formation to Economic Growth", South African Journal of Economics, (Dec., 1970), p.60.

⁷For example, Friedrich List, a contemporary of Adam Smith, and Alfred Marshall.

⁸L. C. Thurow, Investment in Human Capital, (Belmont, California: Wadsworth Publishing Company, Inc., 1970), p.6.

⁹Ibid., pp.6-7.

1. Many individuals who believed in human equality were hesitant to emphasize factors that seemed to indicate inequalities among men. To say that men were economically unequal was a short step from saying that men were politically unequal, inherently unequal, or should not be given equal consumption rights.

2. The esthetics of some people were violated by the thought of using a technique of analysis which considered only the market benefits of investments in human capital.

3. The political aspects of the proper burden of taxation and the causes of income inequalities tended to impinge on economic thinking. One way of countering the political persuasiveness of the argument that individuals should be allowed to keep what they earn due to their own productivity (and therefore that taxes should not be progressive!) was to de-emphasize the importance of human capital.

4. Many people were averse to speaking of investment in humans in the same terms as physical facilities. It was alleged that such an approach degrades human beings to mere "commodities". Man and his interest are then no longer the ultimate aim, but become a mere instrument for greater material wealth and economic growth.

RESURGENCE OF INTEREST

The recent impetus to incorporate measures of human capital into economic models began with G. S. Becker¹⁰ and T. W. Schultz.¹¹ Much of

¹⁰G. S. Becker, Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, (New York: National Bureau of Economic Research, 1964).

¹¹T. W. Schultz, "Investment in Human Capital", American Economic Review, (March, 1961), pp.1-17.

this impetus stemmed from recent concern with the problems of economic growth and the equitable distribution of income. Increases in skills, talents and knowledge are thought to be major contributors of economic growth, and an attempt to redistribute human capital is generally thought to be the preferred method of eliminating income differentials in many capitalist societies.

In particular, Schultz has suggested that:

1. Inclusion of human capital will reverse the view that the capital/income ratio is declining as a result of economic growth.
2. The structure of wages and salaries is primarily determined by investment in schooling, health, on-the-job training, searching for job opportunity information, and by investment in migration.¹²

Becker contributed a theoretical analysis of the value of a business organization's investment in informal education through on-the-job training.¹³ He distinguishes two types of training, general and specific. General training is described as that which is useful in firms other than those providing it. In perfectly competitive markets, wage rates would be set equal to marginal productivity and there would be no incentive for firms to pay any of the costs of training since all of the returns are captured by the trainee.

Specific training is described as training which increases productivity more in firms which provide it than in other firms. A firm providing this type of training may pay for all or a part of the

¹²T. W. Schultz, "Reflections on Investment in Man", Journal of Political Economy, (Supplement: Oct., 1962), pp.1-2.

¹³Becker, Op. Cit., pp.1-36.

training since it can subsequently obtain a return by paying wages less than the marginal productivity of the specifically trained worker.

Becker argues that the firm would normally pay part of the cost and share part of the returns of specific training in order to minimize the danger of losing its investment.

Becker's work is particularly relevant to this study because it represents the only major effort to incorporate the human capital concept in a theoretical framework at the level of the firm. However, as Vertigan points out, care must be taken to distinguish between the value of the human resources under the "control" of the organization and the value of the organization's investment in human resources.¹⁴ The value of an individual increases when training increases the future marginal productivity and wages of the trainee. Value to the organization is increased only when a future return is established through a greater increase in future productivity than in wages.

Drawing upon Thurow, there appear to be four major economic problems which the incorporation of the human capital concept will help to solve.¹⁵ These are:

1. The aggregation problem. To facilitate both micro- and macro-economic analysis, some common denominator is required to quantify and measure the heterogeneous inputs necessary to produce goods and services. The heterogeneity of both land and physical capital has long been recognized, and the market place reflects the common monetary measure of their productivity. The heterogeneity of labour is now generally

¹⁴M. J. Vertigan, "Human Resources - Some Economic Background", Unpublished Working Paper for American Accounting Association Subcommittee on Human Resource Accounting, Dec., 1971, p.8.

¹⁵Thurow, Op. Cit., pp.8-13.

accepted, and while men are not traded in the market, their productive resources are. Thus a monetary measure of human capital is available.

In most economic contexts, the usefulness of the human capital concept depends on the assumption that labour is paid according to its marginal product. Otherwise human capital does not reflect the flow of goods and services which labour produces and ceases to be a good measure of the inputs used in the production process. An additional problem arises from those goods and services which labour produces and which are not sold in the market, especially those which are both produced and consumed by the individual himself. While human skills are developed to produce these goods, they cannot be measured in the traditional way.

2. The investment problem. Many individual and social expenditures are designed to increase labour's productive capabilities. While it is clear that not all of the cost of both formal and informal education can be allocated to this end, it is equally clear that much of it can and does affect productive capabilities. The same can be said for health and migration expenditures.

Such vast expenditure of scarce resources requires analytical methods which will promote good decision making in this area. Adoption of the human capital concept facilitates the application of existing normative and descriptive theories of investment in physical capital to human investment decisions.

3. The growth problem. The attempt to explain economic growth has been mentioned previously in this section as a major reason for the resurgence of interest in the human capital concept. Denison's study of the U.S. economy between 1929 and 1957 was able to explain only 31% of the increase in output in terms of increased quantity and quality of land

and physical capital.¹⁶ Empirical studies done in other countries¹⁷ have also pointed to this "residual" of unexplained growth in national income. Improvement in the quality of labour is an obvious explanation for part of this "residual".

4. The income distribution problem. Reference has previously been made to Schultz' contention that the earnings of individuals are largely determined by the extent of education investments.¹⁸ Clearly, part of the productive capacity of individuals is natural ability which cannot be acquired. Equally clearly, discrimination plays a role in determining the shape of the income distribution in many countries. However, to the extent that income inequality can be reduced by allocating resources to enlarge the productive capabilities of individuals, investment in human capital is considered a desirable goal. To this end, economists are currently interested in those factors which create human capital, and the most efficient method of combining these factors.

SCEPTICISM REMAINS

Continued opposition to the idea of human capital remains. At the conceptual level, Chamberlain¹⁹ recently argued that labour is not a

¹⁶E. F. Denison, The Sources of Economic Growth in the United States and the Alternatives Before the U.S., (New York: Committee for Economic Development, 1962), p.266.

¹⁷See, for example, Odd Aukrust's Norwegian study, reported in "Investment and Economic Growth", Productivity Measurement Review, (February, 1959), pp.35-50.

¹⁸Schultz, "Reflections . . .", Op. Cit., pp.1-2.

¹⁹N. W. Chamberlain, "Some Second Thoughts on the Concept of Human Capital", Proceedings of the 20th Annual Winter Meeting of the Industrial Relations Research Association, (Washington D.C., Dec., 1967), p.1.

commodity because it is attached to human beings. He also argued that there is no way monetary values can be placed on many items that are of interest to the individual and society. Thus decisions concerning the benefits derived from changing the social environment must often be made on faith, rather than on the economist's maximization principles.

In a response to Schultz, Shaffer argued along similar lines.²⁰ In his view, investment in man is not generally undertaken with the expectation of a monetary return and has no traceable effects on future output. It satisfies wants directly. In addition, to the extent that any part of such expenditure is investment in the normal sense, it is rarely, if ever, rationally based. Furthermore, any such part is inseparable from consumption expenditures. Thus it is impossible to satisfactorily compute return on investment in human capital since both the amount of pure "investment" and the return to be allocated are conjectural.

Intuitively, these are serious arguments and must be refuted by those who believe that benefits will accrue through the incorporation of the human capital concept in economic analysis. Concerning the argument that labour is not a commodity, one can only agree, but it is still possible to distinguish between the "value" of a man and the value of a man's labour. With respect to monetary values and the economic rationality of investment decisions, it can be argued that this difficulty extends to physical investment as well as human investment. People may evaluate outputs differently, but in a world of scarce

²⁰H. G. Shaffer, "Investment in Human Capital: Comment", American Economic Review, (Dec., 1961), pp.1026-1035.

resources there seems to be good reason to provide a framework to evaluate all investment decisions. Perhaps the most serious objection relates to the separability of the consumption and investment components of expenditures on human resources. This is a measurement problem which must be faced. At present, one can only agree with Schultz:

. . . any allocation that one makes, based on such clues as seem relevant, must in all honesty be labelled 'arbitrary'. There is little intellectual comfort in the fact that a similar brand of arbitrariness characterizes other areas of analysis. . . .²¹

THE DEFINITION OF HUMAN CAPITAL VALUE

The economic theory of value is well known and mathematically, capital values are easily calculated. However, when speaking of human capital value, some clarification of terms is required. Firstly, a man's human capital value reflects his future productive capabilities. It does not refer to personal qualities such as his value as a family man. Secondly, the capital value of a man may be viewed from at least three points of view: his value to "society", to himself, and to the organization which employs him. The perspective taken will depend upon the particular problem one is interested in.

At the level of the economy, a person's value to society might be defined to include the entire population except for the person being valued (in which case the value of a person to others is measured by any excess of his contribution to production over what he consumes from production). Alternatively, a broader definition of society might include the person being valued which would imply a measure of value as gross productivity, without deducting consumption. As noted by

²¹T. W. Schultz, "Investment in Human Capital: Reply", American Economic Review, (Dec., 1961), p.1035.

Weisbrod,²² whether values are considered as gross or net of consumption may be viewed as involving the judgement of whether (any or all of) one's consumption should be viewed as a final social good or as an intermediate good.

The types of problems which appear to be relevant to this perspective have been discussed earlier in this chapter. They relate primarily to the macro-economic sphere. For example, social policy issues such as education, health, and migration expenditures seem particularly suited to analysis from the point of view of an individual's value to society. In addition, this perspective appears to be useful in helping to explain the sources of economic growth.

In formal terms, the ex post gross value of a man to society is represented as follows:

$$GCV = \sum_{t=0}^n \frac{Y_t}{(1+i)^t} \quad (1)$$

where GCV = gross capital value

Y_t = observed value of productivity in time period t

i = interest rate

Alternatively, if the net concept is used,

$$NCV = \sum_{t=0}^n \frac{Y_t - C_t}{(1+i)^t} \quad (2)$$

where NCV = net capital value

C = observed value of consumption

Such ex post valuation expressions are of limited usefulness. An

²²B. A. Weisbrod, "The Valuation of Human Capital", Journal of Political Economy, (Oct., 1961), p.426.

ex ante definition requires the incorporation of risk and uncertainty,
hence

$$GCV = \sum_{t=0}^n \frac{[\sum_{j=1}^m (P_j Y_j)]^t}{(1+i+u)^t} = \sum_{t=0}^n \frac{EY_t}{(1+i+u)^t} \quad (3)$$

where P_j = probability that Y_j will occur

Y_j = value of productivity

$j \rightarrow m$ = number of possible outcomes

t = time

u = uncertainty premium

and

$$NCV = \sum_{t=0}^n \frac{[\sum_{j=1}^m (P_j Y_j - P_j C_j)]^t}{(1+i+u)^t} = \sum_{t=0}^n \frac{EX_t}{(1+i+u)^t} \quad (4)$$

where C_j = value of consumption

EX = expected value of productivity minus expected
value of consumption (i.e., net productivity)

To operationalize these normative definitions, macro-economists usually turn to the second perspective previously noted, that of value to the person himself. In this case the discounted earnings stream of the person being valued is used as a surrogate to reflect that person's value of production.

Formally,

$$CV = \sum_{t=0}^n \frac{[\sum_{j=1}^m (P_j E_j)]^t}{(1+i+u)^t} = \sum_{t=0}^n \frac{EVE}{(1+i+u)^t} \quad (5)$$

where CV = capital value of an individual to himself

E_j = earnings

EVE = expected value of earnings

It is important to stress again that if this surrogate definition is to be useful in macro-economic analysis, individuals must be paid, at least on average, their marginal product. Otherwise capitalized earnings cannot be used to quantify and measure the inputs of productive resources, and the use of the concept in explaining such phenomena as the sources of economic growth would be vitiated.

This is not to say that the second perspective of value is only useful as a surrogate to reflect the value of a person's productivity in macro-economic analysis. The value of an individual to himself per se may be useful in personal economic planning. For example, a person may wish to evaluate the question of whether or not to undertake further education on the basis of expected future economic returns. Such an evaluation is facilitated by taking into account both the money and opportunity costs to the individual of further education in addition to the expected increase in earning power (if any).²³

Finally, the value of an individual may be viewed from the organization standpoint. As with physical capital, the business organization is primarily interested in human capital in terms of an investment. In a perfectly competitive economy in equilibrium, the gross value of an individual is equal to the costs incurred by the organization in acquiring and maintaining that individual. However, with monopoly, imperfect knowledge or disequilibrium, this equality need not be true. As rational investors, organizations desire to maximize future returns. They are therefore primarily interested in the net present value of

²³For a fuller discussion of this type of analysis see G. A. Mumey, Personal Economic Planning, (New York: Holt, Rinehart and Winston, Inc., 1972), pp.152-161.

human assets.

Formally,

$$NCV = \sum_{t=0}^n \frac{I \sum_{j=1}^m (P_j Y_j)] t}{(1+i+u)^t} - \sum_{t=0}^n \frac{I \sum_{k=1}^s (P_k C_k)] t}{(1+i+u')^t} \quad (6)$$

where NCV = net present capital value

Y_j = value of productivity or services

C_k = cost of acquisition and maintenance k

P_k = probability of cost of acquisition and
maintenance k

u' = uncertainty premium for costs

$k \rightarrow s$ = number of possible outcomes of costs

This definition reflects the fact that in many cases there will be a different set of risks and uncertainties associated with costs than those associated with the productivity stream. For example, contractual costs can extend beyond the stream of expected service contributions.²⁴

The monetary representation of an individual's expected productivity or services can be derived in one of two ways: a) by determining the product of quantity and price, or b) by calculating the income expected to be derived.²⁵ The "price-quantity" method requires the identification of a "service criterion", or measure of an individual's services at different points in time. The price, or market value, of the services must also be determined. Under the "income" method, an

²⁴Thurow, Op. Cit., p.25.

²⁵E. G. Flamholtz, "A Model for Human Resource Valuation", The Accounting Review, (April, 1971), p.260.

individual's future services may already be stated in monetary terms, because they are forecast as expected future income. Where individuals are part of a resource mix, it is also possible, at least in principle, to forecast the income expected to be derived as the product of the services of the whole mix, and to allocate a portion to each individual according to some measure of his relative contribution.

SUMMARY

The interest of economists in the concept of human capital has pre-dated that of accountants. However, until very recently, most influential economists regarded labour as a fixed, homogenous factor of production. Investment in physical facilities was viewed as the key to increased output. Only in the last two decades have economists seen the potential of human capital analysis in providing insights into such problems as growth, investment and income distribution. There remains little ideological objection to the concept. Most present day scepticism revolves around the utility of the concept due to measurement problems.

Human capital value may be viewed from several perspectives, including value to "society", value to the individual himself, and value to the organization which employs him. Normative definitions for each of these perspectives were presented. In an accounting context, the third point of view, that of the organization, is probably the most important of the three. While individual value in this context is easy to conceptualize, several difficulties arise in any attempt to apply the normative definition to the real world. These measurement problems are considered in later sections of this study.

CHAPTER III

THE ACCOUNTING CONCEPT OF HUMAN ASSETS

INTRODUCTION

The aim of this section is to put the problem of human resource measurement into an accounting context. This requires a discussion of the human capital concept as it relates to the meaning of assets in accounting theory.

Accounting may be viewed as the process of identifying, measuring, and communicating economic phenomena for decision making.¹ Acceptance of this widely held view of accounting requires that if we are to identify, measure, and communicate human asset information, then such data must be of some use in decision making. Since human capital values are not currently reported on financial statements, this discussion must be restricted to theoretical arguments related to the assumed usefulness of such data. Some of these assumed uses for the organization will be seen to parallel the purposes of human capital valuation at the level of the economy as discussed in the preceding chapter.

HUMAN ASSETS AND ACCOUNTING THEORY

Accounting reports are aimed at two user groups, one external to the organization (e.g., investors, creditors, labour unions, customers), the other within the organization (management). Different criteria are emphasized in the preparation of reports for these groups. Verifiability,

¹W. J. Bruns, Jr., Introduction to Accounting: Economic Measurement for Decisions, (Reading, Mass.: Addison-Wesley Publishing Company, 1971), p.1.

objectivity and freedom from bias take pre-eminence in external reports, while internal reports stress relevance and usefulness as their raison d'être. The following discussion relates exclusively to the definition of assets for external reporting purposes. Internal reports are not constrained by any authoritative pronouncements as to what constitutes an asset. Management may choose to measure and use human capital data in any way it sees fit.

In his authoritative text on accounting theory, Hendriksen notes the recent emphasis in official pronouncements and other writings to view assets as service potentials or rights to prospective benefits accruing to the business enterprise.² This emphasis, he states, is correct because it provides for an all-inclusive definition and because it permits the problem of measurement to be treated separately.³ Within this basic definition, he sees the following characteristics as being essential:⁴

1. There must exist some specific right to future benefits or service potentials. While uncertainty as to future rights or benefits does affect valuation, an asset exists provided a positive future benefit is expected.

2. The rights must accrue to a specific accounting entity. Though this implies that assets must be under the control of the organization, such control can be interpreted broadly enough to include the ability of the firm to exercise its rights.

²E. S. Hendriksen, Accounting Theory, (Homewood, Illinois: R. D. Irwin, Inc., Rev. Ed., 1970), pp.252-3.

³Ibid., p.253.

⁴Ibid.

3. There must be a legally enforceable claim to the rights or services. Somewhat paradoxically, Hendriksen goes on to state that this does not require that the firm must have a formal legal title or even a formal contract. The accountant, he says, must rely on the apparent intent of those who have an interest in the asset rather than on the strict legality of the right.

A review of other recent authoritative pronouncements reveals another possible criterion. Sprouse and Moonitz suggest that rights to future benefits must have been acquired as a result of some current of past transaction.⁵

Since it is not now a generally accepted accounting practice to attempt to measure and report either a firm's investment in, or the economic value of, its human resources, it seems that the human component of an organization does not satisfy these criteria. This question is now considered in detail.

1. Do human resources have service potential?

Perhaps one reason why the labour force is not considered an asset in terms of this criterion relates to the argument that employees do not have a "service potential" extending beyond the current period; they are paid for rendering current services and no asset is formed by these payments.⁶ Lev and Schwartz take issue with this view by arguing that if it were true, then no firm would invest in (as opposed to maintain)

⁵R. T. Sprouse and M. Moonitz, "A Tentative Set of Broad Accounting Principles for Business Enterprises", Accounting Research Study No. 3, (New York: A.I.C.P.A., 1962), p.8.

⁶Shaffer would probably agree with this argument - see supra, p.13.

human capital.⁷ They argue that expenditures on training programs, facilities for improving employees' morale, etc., are made with the expectation of future returns, thus increasing the service potential embodied in human capital.

Drawing on some of the insights provided by Becker's analysis of the value of a firm's on-the-job training expenditures, this position as a general statement is open to question.⁸ A brief summary of Becker's analytical framework follows.⁹

If we assume perfectly competitive labour and goods markets, then in the absence of hiring and training costs, etc., employees will be paid their marginal product in each period, i.e.,

$$MP_t = W_t ; \text{ for all } t. \quad (1)$$

If we assume training outlays (k) occur in the first period only, the following relationship between present and future receipts and outlays may be described:

$$MP_0 + \sum_{t=1}^{n-1} \frac{MP_t}{(1+i)^t} = W_0 + k + \sum_{t=1}^{n-1} \frac{W_t}{(1+i)^t} \quad (2)$$

If we designate G as the firm's future return from training, then

$$G = \sum_{t=1}^{n-1} \frac{MP_t - W_t}{(1+i)^t} \quad (3)$$

7B. Lev and A. Schwartz, "On the Use of the Economic Concept of Human Capital in Financial Statements", The Accounting Review, (Jan., 1971), p.109.

8G. S. Becker, Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, (New York: National Bureau of Economic Research, 1964).

9Becker's work was briefly introduced earlier in this study - see supra, p.10.

Expression (2) can then be re-stated:

$$MP_0 + G = W_0 + k \quad (4)$$

In addition to actual training outlays (k), the economic cost of training (C) includes opportunity cost which consists of the production opportunities foregone as a result of training, i.e.,

$$MP'_0 + G = W_0 + C \quad (5)$$

where MP'_0 = the opportunity level of product during the training period

Expression (5) represents the basic equilibrium position of the firm with respect to returns and cost of training. Only if the wage rate during training is exactly equal to the trainee's potential marginal productivity during that period will returns and costs be equal, otherwise they will differ.

Given the assumption of competitive markets, then wage rates must equal marginal productivity. Firms, therefore, have no incentive to pay the costs of general training since all of the returns are captured by the trainee.

Thus,

$$G = 0 \quad (6)$$

$$\text{and } MP'_0 = W_0 + C \quad (7)$$

$$\text{or } W_0 = MP'_0 - C = MP_0 - k \quad (8)$$

Expression (8) describes the appropriate wage level for general training in a competitive market. Since future returns are zero, no asset has been created.

Admittedly, the validity of this position rests on the underlying assumptions of perfectly competitive markets and perfectly general training. However, it does point to a situation in which, at least in theory, the service potential embodied in human assets is not increased by a firm's investment in training.

The few empirical studies done on the costs and returns associated with training have been hampered by measurement problems. For example, Mincer noted that the direct costs of on-the-job training (as revealed by accounting data) probably represent only a fraction of the actual costs borne by the firm.¹⁰ However, their conclusions, though very tentative, do indicate that, at the level of the economy, a positive return on training expenditure is earned.

In summary then, it is not possible to conclude unequivocally that Hendriksen's first criterion is met in all cases. At best, we might observe that in light of the unliklihood that the assumptions underlying Becker's analysis hold true in the real world, and on the basis of the (tentative) empirical evidence previously noted, it is probable that some individuals do have increased service potential extending beyond the current period in some organizations.

2. Do the rights accrue to a specific accounting entity?

This question naturally pre-supposes that the first criterion is met. In terms of Becker's theoretical analysis, it might be argued that rights do not necessarily accrue to firms providing purely general training since this training increases the marginal productivity as much

10J. Mincer, "On-the-Job Training: Costs, Returns, and Some Implications", Journal of Political Economy, (Oct., 1962), p.52.

in other firms as it does in the firm providing it. However, given the assumptions of perfectly competitive goods and labour markets, no return will accrue to either the firm providing the training or other firms. Since the first criterion is not met, it cannot be argued that rights do not necessarily accrue to specific firms under these circumstances.

On the other hand, if we turn to Becker's analysis of specific training, theoretical arguments can be made that rights do accrue to a specific firm.

Specific training raises productivity more in the firm providing it than in other firms. The firm providing this training is able to pay for all or part of the training since it can subsequently obtain a return by paying wages less than the marginal product of the specifically trained worker. Becker argues that the rational firm will share part of the cost and part of the returns with the trainee in order to minimize the danger of losing its investment. If we also assume rationality on the part of the specifically trained worker, we can argue that an increase in service potential does accrue to a specific firm in this case.

A more extreme example occurs if we drop the assumption of perfectly competitive labour markets. Where a firm is in a monopsonist position in the labour market, all training is specific and all returns might accrue to the firm providing it.

Evidence is also available that firms attempt to protect their investments in individuals through pension plans and seniority policies. Such measures tend to restrict the mobility of employees in that they exit from the firm at the expense of losing the rights and privileges adhering to these plans or policies.

To summarize, it appears that firms can and do attempt to ensure that rights to the service potential of their employees remain with them. Emphasis is placed on the word "attempt". In terms of Becker's analysis, a world of certainty and of rationality on the part of all firms and all employees would effectively guarantee that rights would accrue to specific firms. However, given the absence of rationality and certainty in the real world, it appears that Hendriksen's second criteria is not strictly met.

3. Is there a legally enforceable claim to the rights?

The legal concept of an asset includes ownership (for physical objects), legal rights to the payment of money or equivalent, and legal privileges of various kinds (e.g., prepaid rent).¹¹ Clearly human resources do not fit this definition.

On the other hand, if we accept Hendriksen's less restrictive view and rely on the apparent intent of those who have an interest in the asset rather than on the strict legality of the right, then arguments can be made that humans do represent assets in this context. Adherents to this view would also favour the capitalization of long-term leases and other executory contracts. In both cases the firm rents the services of capital (human in the former, physical in the latter) owned by others.

Support for this view has been growing in recent years. For example, the AAA committee in A Statement of Basic Accounting Theory stated that:

Accounting at present recognizes most market transactions involving goods, services or money as one of the elements of the transaction. Present accounting also generally ignores, except

¹¹J. L. Dohr, "What is an Asset?", Journal of Accountancy, (March, 1942), p.215.

in special circumstances, transactions involving an exchange of a promise for a promise. Leases, purchase commitments, executive and other labour contracts are generally denied recognition until the services or goods specified in the contract are either used, delivered, or paid for. Many of these contracts meet the standards of verifiability, freedom from bias, and quantifiability at least as well as other reported events.¹²

Similarly, in a monograph on human asset accounting in 1964, Hermanson argues that the test of ownership for items to qualify as assets is a hindrance to the development of good accounting theory.¹³ His definition of assets excludes the ownership requirement.¹⁴

Lev and Schwartz have contributed a suggestion that human assets in general do effectively meet the less restrictive test of "ownership".¹⁵ In their view, it is of no consequence that human capital cannot be owned in the literal sense. Individuals may be able to resign at will, but they can be replaced by others in the labour force. Thus ". . . the labour force as a whole is constantly associated with the firm and it can be constructively regarded as being 'owned' by it".¹⁶ However, the validity of this generalization rests on the assumptions that (a) individuals of equivalent capabilities can be found to replace those who leave, and (b) the firm is able to earn a future return on the (additional) investment in acquiring the replacement, i.e., the

¹²American Accounting Association, A Statement of Basic Accounting Theory, (Evanston, Illinois: American Accounting Association, 1966), p.32

¹³R. H. Hermanson, Accounting for Human Assets, Occasional Paper No. 14, Bureau of Business and Economic Research, (East Lansing: Graduate School of Business Administration, Michigan State University, 1964), p.1.

¹⁴Ibid., p.4.

¹⁵Lev and Schwartz, On the Use . . .; Op. Cit., p.109.

¹⁶Ibid., p.109.

replacement represents an asset to the firm.

Clearly, cogent arguments can be made that human resources effectively meet this criterion in its less restrictive sense. It is equally clear that the legal view is accepted in current practice.

4. Are the rights acquired as a result of some current or past transaction?

Not all authoritative pronouncements specify the satisfaction of this criterion in their definition of assets.¹⁷ Hendriksen himself takes the view that the means of acquisition is possibly irrelevant, the important characteristic being that the rights do exist at a specific date.¹⁸ In any case, human resources appear to meet this criterion since the act of hiring an individual can be considered a transaction in much the same manner as any rental negotiation. In addition, a training outlay made by a firm with the expectation of a future return is clearly a transaction.

From this discussion we can conclude that human resources do not strictly meet all of the above criteria. It should be noted, however, that these criteria really represent an attempt by Hendriksen to obtain a consensus as to what constitutes an asset. There exists no one authoritative definition to this writer's knowledge. Using reverse reasoning, we can say that if current accounting practice reflects "generally accepted" accounting principles, then human resources are not

¹⁷For example, see American Accounting Association, Accounting and Reporting Standards for Corporate Financial Statements, (Iowa City: American Accounting Association, 1957 Revision), p.3.

¹⁸Hendriksen, Op. Cit., p.254.

assets in an accounting sense.¹⁹

Accounting principles do change, though slowly. The many research proposals initiated by the American Accounting Association and the American Institute of Certified Public Accountants during the 1960's indicate a willingness on the part of many accountants to expand the traditional boundaries of accounting measurements. One of these studies suggested that:

"External users may wish to know degrees of employee morale, customer satisfaction, product quality, and reputation of a given entity. If quantification of these were possible, a substantial amount of additional relevant information could be provided the external users. The accountant must constantly be alert to the possible applications of new measurement methods to develop additional quantifiable information for external users".²⁰

This statement suggests that an even broader view of human assets is possible, and many writers support this view. In his book The Human Organization: Its Management and Value, Likert uses human assets to refer to both the human organization and to customer goodwill.²¹ Hermanson takes a wider view again.²² His definition enables him to include as assets not only "owned" assets but also what he refers to as "operational" assets which consist of all scarce resources operating in the entity

¹⁹To be fair, it should be pointed out that purchased goodwill may partially reflect human asset values at the date of acquisition. However this item arises only when one firm is taken over by another, and then only if the so-called "purchase" (as compared to "pooling") method of accounting is used. Furthermore, purchased goodwill is effectively treated as a residual factor to be amortized over a short period of time. Thus we can conclude that there is no direct attempt to measure human resources in current practice.

²⁰American Accounting Association, "A Statement of Basic Accounting Theory", Op. Cit., p.29.

²¹R. Likert, The Human Organization: Its Management and Value, (New York: McGraw-Hill Book Company, 1966), p.148.

²²Hermanson, Op. Cit.

that are not owned.²³ Such definition thus covers even more ground than Likert's view.

In this study, however, we are concerned primarily with the value of a firm's internal members, i.e., managers and employees. To this extent, at least, it appears conceivable that future "generally accepted" definitions of assets will encompass human resources.

ASSUMED USEFULNESS OF HUMAN ASSET ACCOUNTING

The normative definition of human capital value to the firm was presented in chapter II. There it was argued that since the firm is primarily interested in human capital in terms of an investment, it (and other interested parties) will ultimately desire a measure of the value of future returns, i.e., the net present value of its employees. However many writers have argued that useful information can be gleaned from an attempt to measure some of the component parts of this net present value, especially a firm's investment in the human organization. They see this information as being of prime interest to management pending the development and validation of techniques to measure value (and, of course, general acceptance to report human asset data in external reports). To this end, three of the more prominent writers in the field currently see human resource accounting as ". . . the process of identifying, measuring and communicating information about human resources to facilitate effective management within an organization".²⁴

²³Ibid., p.5.

²⁴R. L. Brummet, W. C. Pyle, and E. G. Flamholtz, "Accounting for Human Resources," Michigan Business Review, (March, 1968), p.20.

The perspective taken here will be broader than this. Arguments related to the potential uses of human resource accounting will be considered from the point of view of interested parties both internal and external to the firm and with respect to proposed measurements associated with both the cost and productivity components of our normative definition of human resources.

The original stimulus to report human asset values actually came from the behavioural science area. In their 1963 paper, Likert and Seashore illustrated the possible impact of a failure to account for human asset values in the context of cost reduction programs.²⁵ They argued that while these programs appear to result in short run gains to the organization, their long run consequences can be unfavourable and remain hidden in the short run under traditional accounting practices. As a result of managerial pressure, ". . . the lower levels of management and the non-supervisory employees are apt to begin developing hostile reactions towards higher levels of management".²⁶ This, in turn, affects performance goals, work motivation, and the adequacy and accuracy of communication tends to become unfavourable. Over time, this will result in decreasing productivity, increasing costs, and, finally, a net reduction in earnings.

In effect, these programs tend to liquidate an organization's "human capital", as they produce a deterioration in employee attitudes, motivation, and loyalty as well as increasing the probability of people exiting from the organization. Thus, Likert and Seashore would probably

²⁵R. Likert and S. Seashore, "Making Cost Controls Work", Harvard Business Review, (Nov. - Dec., 1963).

²⁶Ibid., p.99.

argue that the decision to undertake a cost control program should be evaluated in terms of the expected costs to be incurred or value to be lost from liquidating human assets as well as in terms of the cost-savings expected to be derived.

Likert has since suggested the use of social psychological measures of organization condition²⁷ as a first step toward quantifying in dollar terms the changes in human asset values occasioned by such cost reduction programs. Such interim measures, he says, may be used to indicate trends in the productive capability of a firm's human organization.²⁸

Some of the internal managerial decision making benefits envisaged by Likert as a result of these interim and ultimate measures are:

1. More appropriate organizational systems of rewards and punishment where exploitation of human assets for short-run benefits would be reflected as a liquidation of these assets, and where the build-up of such assets may be encouraged.²⁹

2. Comparisons of alternative courses of action based on a more complete concept of relative costs and benefits. For example, what system of management (authoritarian through participative) is most productive and hence should be used by the firm? What strategies of cost control yield the lowest costs?³⁰

²⁷Discussed in detail in chapter V.

²⁸R. Likert and W. C. Pyle, "Human Resource Accounting: A Human Organizational Measurement Approach", Financial Analysts' Journal, (Jan. - Feb., 1971), p.82.

²⁹Likert, The Human Organization, Op. Cit., p.115.

³⁰ibid.

Likert and his associates also view such measures as being useful to parties external to the firm.³¹ Investors and creditors wish to make more accurate predictions of future earnings. They are interested in learning how well a firm's resources are being managed. They therefore want answers to such questions as the following: Are current earnings commensurate with the assets at the disposal of management? Is the investment in certain human assets excessive? Does the firm have redundant assets that could be converted to cash and invested to yield a higher return?

Likert would ultimately include measures of customer goodwill in his notion of human assets.³² These measures, he might argue, would enable decisions related to the firm's social responsibility to be reconciled with profit goals. Further, the loss of customer goodwill and personnel loyalty during a period of wage disputes and strikes may reflect that such loss is more costly than the increase in costs resulting from higher wages.

Though Likert's arguments for the potential usefulness of human asset data appear very persuasive, his proposed measurement methods are at a very early stage of development. Two major problems stand out: the validity of his highly subjective social psychological measurement method, and the conversion of resultant measures into monetary form. These are considered in a later chapter.

Other writers, realizing the difficulties in obtaining "value" measures, have espoused the potential benefits of measures related to

³¹W. C. Pyle, "Human Resource Accounting"; Financial Analysts' Journal, (Sept. - Oct., 1970), p.74.

³²Likert and Pyle; Op. Cit., p.82.

the cost stream only. Brummet, Flamholtz and Pyle note that the acquisition of human resources involves recruiting, selecting and hiring people to meet the organization's present and expected future manpower needs.³³ In addition, training expenditures are often necessary to bring recruits to the desired level of skill and familiarity with the organization and its operations.³⁴ Such training also involves an opportunity cost of foregone income.³⁵

The measurement of these acquisition and replacement cost elements does not present insurmountable problems. Some of the expected benefits include the following:

1. Management will have more complete information on the costs of personnel turnover. Measurement of these costs could be useful in deciding on remedial action and assessment of results.³⁶ Furthermore, an "expected cost" of turnover could be factored into decision models concerning a choice among alternative courses of action. For example, in a choice among alternative locations for a new plant, the firm might survey employee attitudes to determine the expected turnover associated with each location. An "expected cost" of turnover can thus be calculated.³⁷ This factor may well be critical to the decision, but is

³³R. L. Brummet, E. G. Flamholtz, and W. C. Pyle, "Human Resource Accounting: A Tool to Increase Managerial Effectiveness", Management Accounting, (Aug., 1969), p.12.

³⁴Ibid., p.13.

³⁵Ibid.

³⁶R. L. Brummet, E. G. Flamholtz, and W. C. Pyle, "Human Resource Measurement - A Challenge for Accountants", The Accounting Review, (April, 1968), p.218.

³⁷Ibid., p.220.

typically ignored or held constant in such considerations.

2. The process of manpower planning and control is facilitated through the provision of information about the composition of human resource investments. A system of standard acquisition and replacement costs can be developed to this end.³⁸

3. Decisions with respect to laying off employees during temporary recessions may be evaluated in the light of the longer term costs to the firm.³⁹ For example, start-up costs may be estimated according to whether (a) all former employees return, or (b) none return. On the basis of past experience, degree of skills, the employment market, etc., the probability of laid-off personnel finding employment elsewhere can be estimated over a range of different lay-off periods. Expected values for start-up costs and payroll savings can then be compared.

Lev and Schwartz⁴⁰ have also argued for the potential usefulness of measures associated with the cost stream insofar as they reflect the gross value of the human organization.⁴¹ In recommending the use of census-based wage and salary data as the basis for a surrogate measure of gross value, they see the following inferences for both management and investors:

1. The determination of human capital values suggests a new set

³⁸Ibid.

³⁹M. O. Alexander, "Investments in People", Canadian Chartered Accountant, (July, 1971), p.42.

⁴⁰Lev and Schwartz, On the Use . . ., Op. Cit.

⁴¹Discussed in detail in chapter IV.

of financial ratios.⁴² For example, the ratio of human to nonhuman capital indicates the degree of labour intensiveness in the firm. Through the assignment of different weights to different employees according to their earning power, this ratio reflects the quality as well as the quantity of the labour force.

Lev and Schwartz⁴³ and Ronen⁴⁴ point out the similarity of purpose in attempting to measure the composition of resources (a) at the level of the firm, and (b) at the level of the economy. In the former case, such measures may be useful in determining the effect of skill intensity on rate of return and growth, and would help to assess changes in the patterns of risk assumed by the firm. In the latter, changes in the nation's composition of resources may shed some light on the patterns of economic growth.

2. Reported human capital values will provide information about changes in the structure of the labour force.⁴⁵ For example, it has been suggested that the "aging" of the firm's labour force affects its rate of growth and relative share in the industry vis-à-vis the "younger" and more aggressive firms.

3. The difference between the general (based on industry-wide averages) and specific (based on the firm's actual wage scale) values of human capital may help to explain the observed phenomenon of firms

⁴²Lev and Schwartz, On the Use . . ., Op. Cit., p.107.

⁴³Ibid.

⁴⁴J. Ronen, "Human Resource Accounting: Review of Economic Literature", Unpublished Working Paper for American Accounting Association Sub-committee on Human Resource Accounting, Dec., 1971, p.6.

⁴⁵Lev and Schwartz, On the Use . . ., Op. Cit., p.108.

which consistently pay higher wages than the industry averages.⁴⁶ Do such firms employ the professional elite and experience a higher rate of return or growth than their competitors, or do such wage rates merely reflect employees' marginal productivity so that no extra returns accrue from employing superior employees? Lev and Schwartz see their gross value measures as a starting point in answering these questions.

Flamholtz has recently criticized Lev and Schwartz on the somewhat trivial grounds that investor decisions are not defined for which such human capital information is useful.⁴⁷ In reply, Lev and Schwartz state that in the absence of a well-defined and empirically valid set of investor decision models, their proposals are presented on the basis that they might be useful.⁴⁸ Indeed, the same could be said with respect to all of the proposed uses of human capital information described in this section.

When measures of value are developed and validated, two important potential uses emerge, both of which closely parallel the purposes of similar measures at the level of the economy.

1. As discussed in chapter II, the measurement of return on investment in human capital at the macro-level has implications for such national policy matters as education, health and immigration. At the level of the firm, such measures have implications for both internal (capital budgeting decisions) and external (investment decisions) users.

⁴⁶Ibid.

⁴⁷E. G. Flamholtz, "On the Use of the Economic Concept of Human Capital in Financial Statements: A Comment"; The Accounting Review, (Jan., 1972), p.151.

⁴⁸B. Lev and A. Schwartz, "On the Use of the Economic Concept of Human Capital in Financial Statements: A Reply"; The Accounting Review, (Jan., 1972), p.153.

2. Just as human capital value measures will allow meaningful comparison among nations, so will these measures lead to increased comparability among firms. Potential investors will be provided with more complete information on which to base their investment decisions. This, in turn, will lead to more efficient allocation of resources both in the world at large and within individual nations.

Finally, measures of value might be useful in protecting the firm against the loss of its human resources. At present, group life insurance is automatically based on employee salaries (which, as we have seen, may bear no relation to the value of employees to the firm). Lee, Barron and Rosenbloom have developed a linear programming model which attempts to measure the value of replaceable human resources on the assumption that such assets will be replaced if lost.⁴⁹ This "value" measure relates only to the loss of an employee's future services during the period of regeneration, thus mitigating the "time horizon" problems associated with other value measures. Though statutory requirements would currently appear to inhibit the implementation of this protection device, it does appear to have merit for the risk management activities of firms.

SUMMARY AND CONCLUSIONS

An attempt has been made in this chapter to place the economic notion of human capital into an accounting context. In the first place, the question of whether human capital can be considered an asset in terms of current financial accounting theory was discussed.

⁴⁹J. F. Lee, F. H. Barron, and J. S. Rosenbloom, "Evaluating and Protecting Human Resources", Financial Executive, (March, 1972), pp.56-58.

Since nothing exists which can be described as the universally accepted definition of an asset, this question was considered in the light of several criteria which appear to represent a consensus of authoritative opinion. It was generally concluded that human resources fail to meet, in all cases, a strict interpretation of these criteria. However, given a more liberal interpretation, persuasive arguments can be made that human resources meet the spirit or intent of the criteria. Furthermore, in the light of recent research proposals sponsored by professional accounting bodies in the United States, it was suggested that authoritative definitions of assets may well specifically include human resources, at least to the extent of the firm's internal human organization, in the foreseeable future.

In the second place, the assumed usefulness of human capital data was considered from the point of view of interested parties both internal and external to the organization or accounting entity. This step was considered necessary in view of the avowed purpose of accounting to provide information for the decision maker. The arguments presented indicate a strong case in favour of providing human capital data. Although the ultimate goal is the provision of a measure of net present value, many writers have argued that useful information can be obtained in the interim from measures associated with the cost stream only as well as from social psychological measurement data.

A couple of points should be borne in mind with respect to the potential uses of human asset data. Firstly, most proponents do not distinguish the relative usefulness of such data to various organizations. In such human-resource intensive industries as aerospace, advertising, consulting, entertainment, professional firms and universities, the implications are obvious. However, where much of the human organization

plays a relatively fixed role in relation to physical capital in generating future income, (e.g., telephone, railroad companies) or where environmental constraints place an uncontrollable limit on future income (e.g., several types of farming), such data will be much less useful.

Secondly, the expected utility of human asset data depends to a large extent on the development and validation of measurement methods. Though this is obvious with respect to value measures and the conversion of social psychological measurement data into monetary form, it is not so obvious with regard to measures associated with the cost stream. Historical measurement of investment outlays, for example, does involve an allocation problem. Measurement methods are considered in the following chapters.

CHAPTER IV

METHODS OF MEASUREMENT: DOLLAR

INTRODUCTION

Perhaps the major problem in attempting to derive a real-world measure of the normative definition of the value of the firm's human resources lies in obtaining a monetary representation of an individual's expected productivity. As noted in chapter II, Flamholtz has suggested two ways in which this measure may be derived, the so-called "price-quantity" method and the "income" method.¹ Following are some of the problems, as yet unresolved, in obtaining valid real-world measures under either of these methods.

If the "price-quantity" method is used, it may be difficult to obtain valid performance or service criteria. For example, where an individual is part of a mix of human, physical and financial resources, it may be difficult to determine his actual or expected contribution. Further, even though performance criteria may be available, it is difficult to forecast not only the quality of expected future services, but also the prices for these services.

If the "income" method is used, the problem of estimating future earnings is evident. This is especially difficult where individuals are part of a resource mix which includes people as well as other resources. Elias points out the analogy of this problem to the joint cost problem.²

¹E. G. Flamholtz, "A Model for Human Resource Valuation", The Accounting Review, (April, 1971), p.260.

²N. Elias, "The Impact of Accounting for Human Resources on Decision-Making: An Exploratory Study", Unpublished Ph.D. Dissertation, University of Minnesota, 1970, p.29.

He notes that the present value of a single asset depends on the order in which this asset is acquired relative to other assets.³ For example, if asset A is the first asset acquired, its present value may be \$10,000. Now if asset B is acquired, the combined present value of A and B may become \$12,000, so that the present value of B alone would be considered to be \$2,000. However, if asset B was the first asset acquired, its present value might have been \$10,000 and A's \$2,000. Though methods exist to allocate these values (for example, one could take the weighted average of the values of each asset assuming different orderings of acquisition), they are necessarily arbitrary. Finally, there remain the well-known technical difficulties in selecting an appropriate discounting rate.

The difficulty in obtaining a principal measure of value has prompted a search for surrogate measures (which, by definition, can be used in place of the principal measure).⁴ The results of this search for operational "valuation" models are considered in this chapter. It will be seen that some of these models use the individual employee as their evaluation base (such "values" are aggregated to obtain a measure of human resource value to the firm), while others attempt to obtain a single overall measure for the firm. A critique of these models is presented having regard to (a) the apparent validity of resulting measures as surrogates of value, and (b) the practical problems in implementing the models.

³Ibid.

⁴For an excellent discussion of the characteristics and use of surrogate measures in decision-making, see Y. Ijiri, R. K. Jaedicke, and K. E. Knight, "The Effects of Accounting Alternatives on Management Decisions"; Research Accounting Measurement, ed. by R. K. Jaedicke, Y. Ijiri, and O. Nielson, (Evanston, Illinois: American Accounting Association, 1966), pp.186 - 199.

MEASURES OF COST

Outlay (Acquisition) Cost: The "Barry" Model

In conjunction with the University of Michigan Institute for Social Research, the R. G. Barry Corporation has recently installed a human resource accounting system.⁵ Barry, a small apparel manufacturer, is a public company listed on the American Stock Exchange. While the company ultimately intends to develop replacement cost and value measures, to date it has concentrated on historical measures of outlay cost with respect to 147 managers and 425 factory and clerical personnel.⁶ The following chart shows how the model works. (Figure I).⁷

Cost data for the model's investment components are generated in two ways: (1) direct out-of-pocket expenditures for such activities as recruiting and acquisition of people, training and seminar expenses, etc., and (2) allocations of salary for periods of training, familiarization and development - periods when the organization is unable to benefit fully from a person's efforts.⁸

Human resource account balances are amortized annually based upon

⁵For a detailed description of this system, refer R. L. Woodruff and R. G. Whitman, "The Behavioural Aspects of Accounting Data for Performance Evaluation at the R. G. Barry Corporation (with Special Reference to Human Resource Accounting)", The Behavioural Aspects of Accounting Data for Performance Evaluation, ed. by T. J. Burns, (Columbus: College of Administrative Science, The Ohio State University, 1968), pp.1-34.

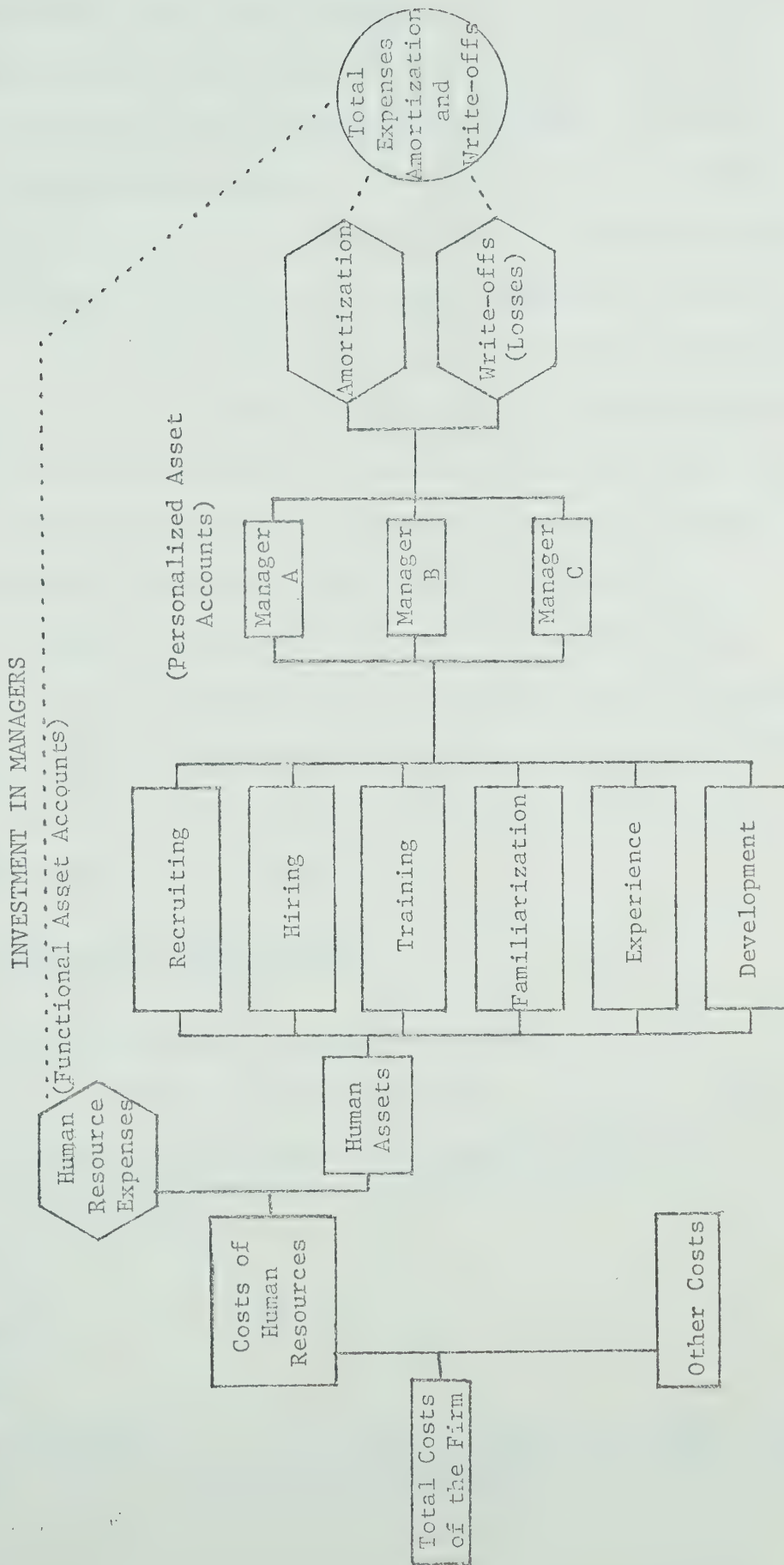
⁶W. C. Pyle, "Monitoring Human Resources - 'On Line'", Michigan Business Review, (July, 1970), p.26.

⁷R. L. Brummet, E. G. Flamholtz, and W. C. Pyle, "Human Resource Measurement - A Challenge for Accountants", The Accounting Review, (April, 1968), p.222.

⁸R. L. Woodruff, "Human Resource Accounting", Canadian Chartered Accountant, (Sept., 1970), p.158.

Figure I

GENERALIZED MODEL OF HUMAN RESOURCE ACCOUNTING SYSTEM FOR



the expected working life of the individual, or, in the case of training and development accounts, on a fixed, shorter period.⁹ All accounts are frequently reviewed by operating managers who indicate any specific write-offs to training, experience, or development which are deemed necessary due to "obsolescence" of the investment.¹⁰ Total write-off obviously occurs on the departure of an employee from the company.¹¹

Thus, in this model, human assets are valued as the unexpired portion of the cost of recruiting, hiring, training, familiarization and development of personnel. These costs are accumulated for each employee, and are assumed to be additive in representing a measure of value to the organization (though, to complete the picture, the company is now attempting to design a system to measure so-called organizational investments which are defined as investments undertaken in human resources over and above those made in individual employees as individuals, and which offer long term benefits to the organization, e.g., organizational start-up and planning expenditures).¹²

Positional Replacement Cost: Flamholtz

Flamholtz has defined positional replacement cost as ". . . the sacrifice that would have to be incurred today to replace an individual in a specified position with a substitute capable of providing an

⁹Ibid.

¹⁰Ibid.

¹¹Ibid.

¹²R. L. Brummet, W. C. Pyle, and E. G. Flamholtz, "Human Resource Accounting In Industry"; Personnel Administration, (July - Aug., 1969), p.43.

equivalent set of services in the given position".¹³ It refers not to the cost of replacing a given individual, but to the cost of replacing the set of services required of any incumbent in a specified position.¹⁴

This measure, Flamholtz states, should include both outlay and opportunity costs as well as direct and indirect costs.¹⁵ The following chart identifies the replacement cost elements which Flamholtz feels ought to be measured. (Figure II).¹⁶

Acquisition costs, learning costs, and separation costs are seen to comprise the basic elements of the model. Acquisition costs refer to the sacrifice that must be incurred to acquire a new position holder, and closely parallel those of the "Barry" model except for the "cost of promotion or transfer from within". This latter element comprises ". . . the cost . . . incurred when one position holder is used to replace another".¹⁷ Flamholtz notes that except in entry level positions, this element can involve an iterative chain of vacancies and replacements.¹⁸

Learning costs are defined as the differential cost incurred until an individual achieves the level of productivity that is normally expected in a given position.¹⁹ In addition to direct outlays, this

¹³E. G. Flamholtz, "Human Resource Accounting: Measuring Positional Replacement Cost", Unpublished Paper, Graduate School of Business, Columbia University, 1972, p.6.

¹⁴Ibid.

¹⁵Ibid., p.7.

¹⁶Ibid., p.8.

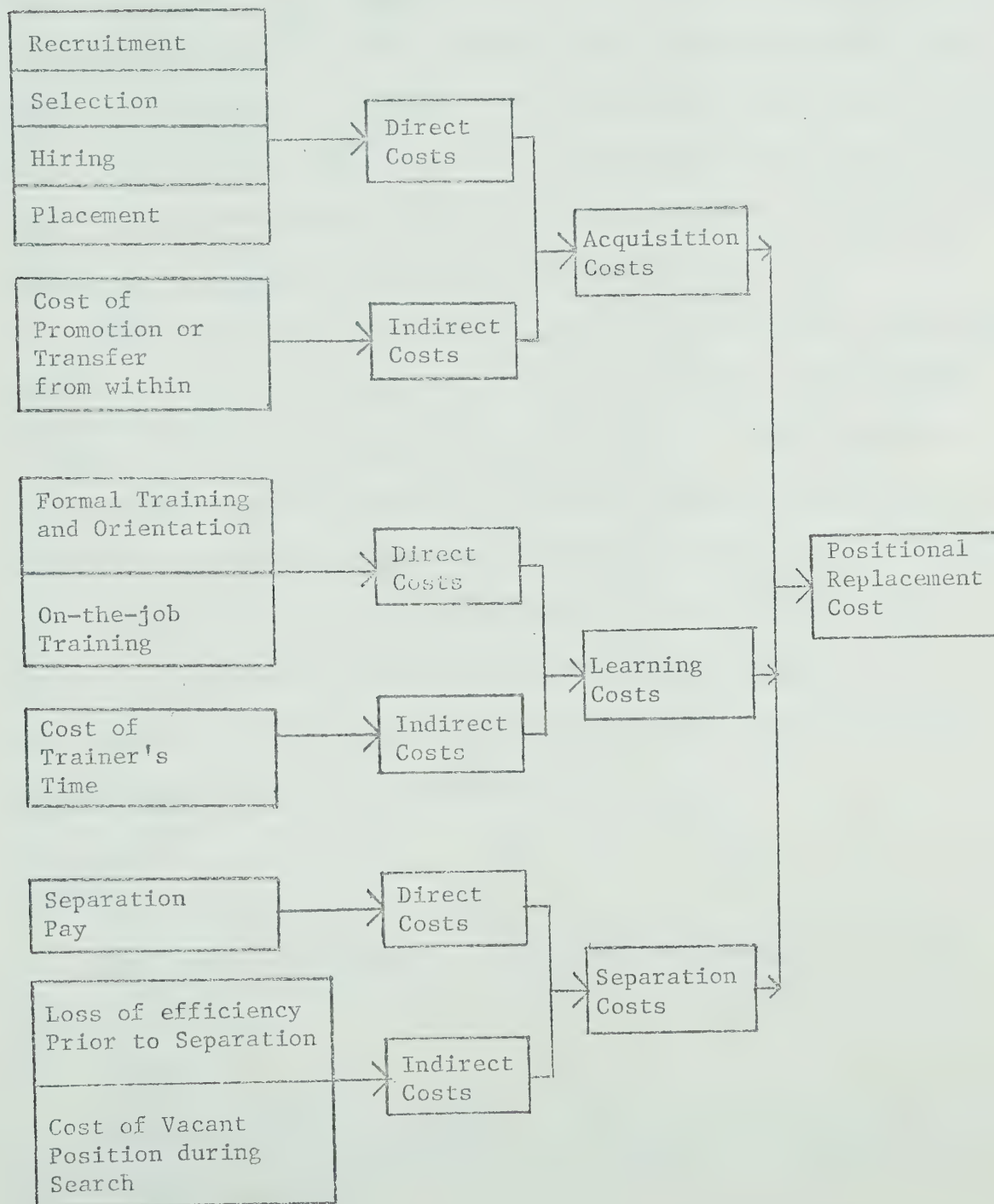
¹⁷Ibid., p.7.

¹⁸Ibid.

¹⁹Ibid., p.9.

Figure II

MODEL FOR MEASUREMENT OF HUMAN RESOURCE REPLACEMENT COSTS



element includes the opportunity cost of lost performance of others in addition to the trainee.

Separation costs refer to the cost of separating the present position holder.²⁰ For example, an indirect cost may occur because the responsibilities of the vacant position are not being performed. This impact may extend to the holders of other positions who may perform less effectively when one position is vacant. Another element refers to the cost of lost productivity prior to separation, assuming that there is a tendency for performance to decrease at such a time.

Flamholtz' model is intended to develop two measures of positional replacement cost, both "standard" and "anticipated".²¹ The difference between the two has to do with the availability of "natural substitutes".²² Standard positional replacement cost refers to the cost to replace an individual assuming he is replaced by the "natural" or "most desirable" substitute whereas anticipated cost refers to the estimated cost to replace an individual by the "best available substitute".²³ The difference can sometimes be attributed to the degree of effectiveness of manpower planning in an organization.

Analysis

The "Barry" model and the "Flamholtz" model possess basic

²⁰Ibid.

²¹Ibid., p.10.

²²Ibid.

²³Ibid.

similarities and differences. They are alike in that they focus on cost as a surrogate for value, and both utilize the individual as the basic unit of measurement. They differ in the scope, purpose and timing of measurement. One is an ex ante valuation model (Flamholtz) while the other is an ex post model (Barry). A critique of each model follows under the terms stated in the introduction to this chapter.

The limitations of historical cost as a surrogate for value are well known. Returning to Becker's theoretical analysis of on-the-job training,²⁴ Vertigan notes that from the basic relationship developed by Becker, i.e.,

$$MP'_0 + G = W_0 + C$$

only in special circumstances will cost be an appropriate measure of investment value. This condition will hold only when the wage rate during the training period is exactly equal to the trainee's potential marginal product during that period.²⁵ In addition, he notes that the use of outlay cost completely ignores the extent to which training outlays might have been recouped by salary reductions during training.²⁶ If we assume at the extremity that perfectly general training only is provided by the firm, then it is feasible that all training outlays are recouped by the firm in this way. Further, given Becker's underlying assumptions of perfectly competitive goods and labour markets, then

²⁴G. S. Becker, Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, (New York: National Bureau of Economic Research, 1964).

²⁵M. J. Vertigan, "Human Resources - Some Economic Background", Unpublished Working Paper for American Accounting Association Subcommittee on Human Resource Accounting, Dec., 1971, p.8.

²⁶Ibid., p.9.

future returns are zero. Thus, in this situation, outlay cost is seen to overstate the net present value of a firm's on-the-job training investment by the full amount of the outlay.

The validity of these arguments, of course, rests on the assumption of perfectly competitive markets. Furthermore, Becker's analysis deals only with the on-the-job training aspects of outlay cost. Nevertheless, the analysis does serve to point out some of the theoretical inadequacies of historical cost as a measure of value.

At present, no attempt has been made to assess the reliability and validity of the Barry measurement system. However, even if it was established that the outlay cost accumulation procedures at Barry do reflect an approximation of value to the firm at the time of acquisition, several problems would remain. Firstly, such costs would need to be converted to some common denominator in order to take account of fluctuations in the measuring unit (i.e., the price level problem). Secondly, before such a system could reasonably be expected to provide a measure of the value of the firm's human assets, it would need to be in operation for a number of years, ideally the number of years that the longest standing employee has been with the firm. Finally, the validity of amortization procedures would still need to be established.

With regard to the practical problem of implementation, it appears that the "Barry" model scores highly in relation to other suggested models. It is, in fact, the only human resource measurement system which has been fully implemented in an organization. Furthermore, since it is based on conventional accounting procedures, it seems more likely to enjoy general acceptance than other models.

The main problems in obtaining the required data revolve around two areas. Firstly, while great confidence can be placed in obtaining

accurate measures of certain cost elements (e.g., development expenditures where an employee attends a training course and is physically absent from the firm), this cannot be said with respect to other elements. For example, the salary allocation methods with regard to informal training and familiarization are highly subjective and necessarily arbitrary. Secondly, the same subjectivity and arbitrariness characterize the amortization procedures.

Turning now to the "Flamholtz" model, it can be argued that replacement cost is apparently more valid as a surrogate of value than historical cost, since it is, by definition, more closely related to the market's current assessment of an asset's economic value. Chambers, in fact, once went so far as to say that current cost is the market's estimate of economic value:

The price currently ruling for producers' goods is the market's assessment of the present value of expected income flows from their use at the present level of prices, for all potential users of such goods.²⁷

This assessment, of course, assumes an absence of market imperfections. But is replacement cost the same thing as current cost? Flamholtz believes so insofar as replacement cost represents the sacrifice to be incurred by a single firm rather than the market as a whole in replacing its resources.²⁸

The absence of direct market measures²⁹ of replacement cost

²⁷R. J. Chambers, Towards a General Theory of Accounting, (Melbourne: The Australian Society of Accountants, 1963), p.29.

²⁸Flamholtz, "A Model . . ."; Op. Cit., p.264.

²⁹Some exceptions do exist, for example, professional athletes in football, baseball and basketball.

prompted Flamholtz to develop his model. Thus, the model itself really attempts to measure an unknown market assessment of value, which, in turn, may approximate economic (net present) value to the firm. It can therefore be constructively regarded as an attempt to measure the surrogate of a surrogate. Barring compensating errors, it seems fair to say that resulting measures are apparently less valid as surrogates of economic value than would be the case if market assessments were available, though this remains, of course, an empirical question.

Another question relates to the additivity of such values in obtaining a surrogate measure of the value of the firm's total human resources. It would appear that the model was not designed to provide such an aggregate measure. In view of the iterative chain of effects which the model attempts to measure (for example, learning costs include the opportunity cost of lost performance of others in addition to the trainee), it is clear that countless permutations of effects are possible if all personnel were valued simultaneously. It therefore seems obvious that the model attempts to measure positional replacement cost for one position holder at a time, assuming all other position holders constant. The ramifications of this argument are particularly clear with respect to "anticipated" positional replacement cost. Again, the validity of such an aggregate measure as a value surrogate remains an empirical question.

Most of the practical problems of implementing the model emanate from the fact that, being an ex ante valuation model, resulting estimates of replacement cost are subject to wide variation. For example, Likert and Bowers reported that when managers were asked to estimate the cost of completely replacing their human organization, the estimates ranged

from two to ten times their annual payroll.³⁰

Flamholtz has attempted to apply his model at a branch of a medium-sized insurance company in the United States.³¹ In this study, one sales team of 15 salesmen and 16 claims personnel served as subjects. In addition, five supervisors provided estimates of some of the data required.³² Flamholtz was able to collect some of the data from objective sources such as historical records, time sheets, and wage rates, though the cost estimates derived from these sources represented a relatively small proportion of total positional replacement cost.

With regard to the necessary subjective estimates of indirect costs, Flamholtz did make an attempt to ensure that these had face-validity to the organization. He did this by requesting top management to indicate those persons who were most capable of providing reliable estimates of the particular data involved. In addition, he drew on Festinger's theory of cognitive dissonance by requesting those making the estimates to indicate the degree of confidence they had in the reliability of the estimates. Where a low degree of confidence was perceived, Flamholtz reasoned, estimators would experience discomfort or dissonance, and would be moved to search for more information to reduce such dissonance.

In conclusion, Flamholtz does appear to have demonstrated the feasibility of implementing his replacement cost model. Moreover, should an organization such as Flamholtz' research site decide to implement an on-going system for accumulating replacement costs, then the verifiability

³⁰R. Likert and D. G. Bowers, "Organizational Theory and Human Resource Accounting", American Psychologist, (Sept., 1968), p.588.

³¹Flamholtz, Human Resource Accounting . . . , Op. Cit.

³²Ibid., p.11.

of the data could be enhanced. In the meantime, however, the model can at best provide crude "first approximations" of the true unknown positional replacement costs.

DISCOUNTED REMUNERATION: LEV AND SCHWARTZ

According to Lev and Schwartz, the value of human capital embodied in a person of age τ is the present value of his remaining future earnings from employment.³³ Their valuation model for a discrete income stream is:³⁴

$$V_{\tau} = \sum_{t=\tau}^T \frac{I(t)}{(1+r)^{t-\tau}} \quad (1)$$

where V_{τ} = the human capital value of a person τ years old

$I(t)$ = the person's annual earnings up to retirement

r = a discount rate specific to the person

T = retirement age

Since only after retirement is the series $I(t)$ known, Lev and Schwartz convert this ex post valuation expression to an ex ante model by replacing the observed (historical) values of $I(t)$ in (1) with estimates of future annual earnings, denoted $I^*(t)$.³⁵

Thus

$$V_{\tau}^* = \sum_{t=\tau}^T \frac{I^*(t)}{(1+r)^{t-\tau}} \quad (2)$$

³³B. Lev and A. Schwartz, "On the Use of the Economic Concept of Human Capital in Financial Statements", The Accounting Review, (Jan., 1971), p.105.

³⁴Ibid.

³⁵Ibid., p.106.

Finally, they incorporate the possibility of death occurring prior to retirement age into their model:³⁶

$$E(V_{\tau}^*) = \sum_{t=\tau}^T P_{\tau}(t+1) \sum_{i=\tau}^t \frac{I_i^*}{(1+r)^{t-i}} \quad (3)$$

where $E(V_{\tau}^*)$ = the expected value of a person's human capital

$P_{\tau}(t)$ = the probability of a person dying at age t

Lev and Schwartz suggest that both the "general" and "specific" value of a firm's human capital can be estimated through the operation of this model.³⁷ The former would be based on age/average earnings profiles as revealed by census data for homogenous groups of employees.³⁸ The latter would be based on the firm's own wage scale for the same homogenous groups.³⁹ Lev and Schwartz emphasize that the "specific" value can be computed only if the firm's labour force is large and relatively specialized, i.e., when there is an ample amount of cross-sectional data to form the earnings profiles.⁴⁰

The use of mortality tables, which are available for every country and region, is suggested as the means of estimating the probability of death occurring prior to retirement age.⁴¹ Finally, Lev and Schwartz deem

³⁶Ibid.

³⁷Ibid., p.107.

³⁸Ibid.

³⁹Ibid.

⁴⁰Ibid.

⁴¹Ibid., p.106.

the appropriate discount rate to be the firm's cost of capital.⁴² This, they state, is the rate used in capital budgeting decisions, and is also the opportunity cost of the firm's resources.⁴³

Analysis

The Lev and Schwartz model does not attempt to measure the net value of a firm's human resources. It purports to measure gross value, and then only insofar as the average future earnings of employees represent their contributions to the future earnings of the organization. It can therefore be regarded as a partial valuation model in terms of the normative definition of human capital value adopted in this study. With this in mind, it remains to consider the apparent validity of the model in turning out surrogate measures of gross human capital value.

One major limitation of the model (alluded to above) relates to the assumption that an individual is paid what he is worth to the firm, i.e., that his wage rate reflects his marginal productivity. Obviously, this assumption does not hold true except in the case of perfectly competitive labour markets. Furthermore, even if we assume a world of perfectly competitive labour markets, the use of average earnings data for homogenous groups will not necessarily ensure a valid measure of gross value to a particular firm. Though this is obvious with respect to the authors' so-called "general" value of a firm's human capital, it also applies to the "specific" value. Following are some reasons for this.

First, current age/average earnings profiles do not necessarily

⁴²Ibid., p.107.

⁴³Ibid.

reflect the future earnings of employees. The model explicitly prescribes the use of current data as a substitute for estimated data in this regard. Second, the model ignores the possibility that the individual will exit from the organization for reasons other than death or retirement. As noted by Flamholtz, people leave organizations for a variety of reasons, both voluntary and involuntary.⁴⁴ Third, the model also ignores the probability that people will make role changes during their careers.⁴⁵ For example, while it is not uncommon for a specialist engineer to assume a managerial position later in his career, the model assumes that such an employee will remain in the firm in his original capacity until his death or retirement. Finally, there remain the well known technical difficulties in selecting an appropriate discount rate.

It could be argued that it would be a relatively easy matter to incorporate the second and third points raised above into the model as it now stands. In fact, Lev and Schwartz have stated their intention to do so.⁴⁶ However, this would not alleviate the estimation problems which stem from the ex ante nature of the model.

In this writer's view, however, the above problems are secondary to the major conceptual weakness of a model which purports to generate surrogate measures of gross human capital value to the organization. This weakness relates, of course, to the assumption that wage rates reflect the marginal productivity of employees.

Moving now to implementation problems, it appears that Lev and

⁴⁴E. G. Flamholtz, "On the Use of The Economic Concept of Human Capital in Financial Statements: A Comment", The Accounting Review, (Jan., 1972), p.149.

⁴⁵Ibid., p.150.

⁴⁶B. Lev and A. Schwartz, "On the Use of the Economic Concept of Human Capital in Financial Statements: A Comment", The Accounting Review, (Jan., 1972), p.153.

Schwartz have amply specified the primary data sources for their model with respect to their "general" value measures (cross-sectional earnings data and mortality tables from census statistics). Provided the firm has derived its cost of capital for use in capital budgeting decisions, then presumably an "appropriate" discount rate is also available. However, the issues are not so clear with regard to "specific" value measures. The following data-gathering problems may exist.

Firstly (and this limitation is admitted by Lev and Schwartz), the firm would need to employ large numbers of employees of different kinds and different ages in order to determine earnings profiles based on the firm's own wage scale. This may effectively limit the application of the model to relatively few firms in the economy. Secondly, a question can be raised with respect to the legitimacy of applying economy-wide mortality data to homogenous groups in individual firms. This arises because of the small sample size of any individual firm in relation to the economy as a whole. A partial solution to this problem may exist through the application of mortality data specific to the particular firm, though this would require the collection of appropriate data over a long period of time. Again, this requirement may effectively limit the application of the model to a few large firms in the economy. Finally, when the career movements and turnover of employees are incorporated into the model, a means of providing valid estimates of such data will need to be found.

ADJUSTED PRESENT VALUE; HERMANSON

Hermanson's model requires the computation of two distinct

measures.⁴⁷ First, the total wage payments of the firm for each of the ensuing five years are estimated.⁴⁸ This stream is then discounted to present value by using the "economy rate of return on owned assets for the latest year".⁴⁹ Hermanson defines his terms and computes this rate as follows:

Owned assets (include) all scarce resources, legally or constructively owned by the entity, that have a separate determinable market value and therefore could conceivably be directly used or converted for the payment of its debts.⁵⁰

The "average value of owned assets" represent the ". . . arithmetic average of the daily value of owned assets which were under the control of the entity throughout the year".⁵¹ (Though the monthly, quarterly, or annual average will suffice for practical purposes).⁵² This value is then aggregated for all firms in the economy to provide the denominator for calculation of the "economy rate of return".

The numerator is defined as "net income after taxes" and is selected because the point of view adopted by Hermanson is ". . . that of the absentee owner".⁵³ Again, net income after taxes is aggregated for all firms in the economy.

The second distinct measure required for operation of the model is

⁴⁷R. H. Hermanson, Accounting for Human Assets, Occasional Paper No. 14, Bureau of Business and Economic Research, (East Lansing: Graduate School of Business Administration, Michigan State University, 1964), pp.15-17.

⁴⁸Ibid., p.15.

⁴⁹Ibid.

⁵⁰Ibid., p.5.

⁵¹Ibid., p.9.

⁵²ibid.

⁵³ibid.

a so-called "efficiency ratio".⁵⁴ This ratio is designed to measure ". . . the effectiveness of the human resources operating in a given entity over a five-year period".⁵⁵ It is given by the following formula:⁵⁶

$$\text{Efficiency Ratio} = \frac{5\left(\frac{R_{F0}}{R_{E0}}\right) + 4\left(\frac{R_{F1}}{R_{E1}}\right) + 3\left(\frac{R_{F2}}{R_{E2}}\right) + 2\left(\frac{R_{F3}}{R_{E3}}\right) + 1\left(\frac{R_{F4}}{R_{E4}}\right)}{15}$$

where R_{F0} = the rate of accounting income on owned assets
for the firm for the current year

R_{E0} = the average rate of accounting income on owned
assets for all firms in the economy for the
current year

R_{F4} = the rate of accounting income on owned assets
for the firm for the fourth year previous

R_{E4} = the average rate of accounting income on owned
assets for all firms in the economy for the
fourth year previous.

Hermanson thus gives more weight to the "efficiency of the firm's human resources" in the more recent years.⁵⁷

The final step is to multiply the present value of future human resource payments by the efficiency ratio.⁵⁸ The product is then said to represent the "adjusted present value" of human resources to the

⁵⁴Ibid., p.16.

⁵⁵Ibid.

⁵⁶Ibid.

⁵⁷Ibid., p.17.

⁵⁸Ibid.

firm.⁵⁹ Hermanson apparently sees the net worth of human resources as the difference between this adjusted present value measure and his measure of the present value of future wages. This difference may, of course, be positive, negative or zero, depending on whether the efficiency ratio is greater than 1, less than 1, or zero, respectively.

Analysis

It will be obvious from this description that the conceptual foundations of the model are subject to severe criticism. However, in fairness to Hermanson, it should be pointed out that his was the first attempt to provide a practical human resource measurement model at the micro-level. Moreover, he appears to have been constrained by a felt need to adapt his model for use in the context of traditional financial accounting reports.

The limitations of discounted remuneration as a surrogate of gross value have been discussed in connection with the Lev and Schwartz model. The apparent validity of Hermanson's model is further weakened by the purely arbitrary selection of five years as the period for discounting. No reasons are offered in support of this choice, probably because no logical reasons exist.

Much the same can be said with respect to the selection of the discount rate. There appears to be no logical justification for the use of an average, economy-wide measure of rate of return in discounting a particular firm's future wage obligations. Surely the appropriate rate to use is the opportunity cost of the firm's human resources. This bears no necessary relation to a rate which purports to measure the

⁵⁹Ibid.

economy-wide return on "owned" assets only during one particular year.

The use of the efficiency ratio in modifying gross value is also questionable on several counts. First, the ratio is an historical measure which does not necessarily reflect the future efficiency of the firm's human resources relative to the economy average. Second, the ratio can be said to reflect much more than the efficiency of human resources. Environmental factors beyond the control of the organization, such as strikes, government intervention, accidents, etc., are also reflected in such a measure. In addition, because the ratio is based on traditional accounting measures of rates of return, it is subject to a variety of measurement methods yielding diverse results from the same basic data.

Finally, for any or all of the above reasons, the validity of Hermanson's "net worth" measure as a surrogate of the value of a firm's human resources is highly questionable.

It was previously observed that Hermanson seemed to be concerned with developing a model which might conceivably be implemented in the context of traditional financial accounting reports. It is therefore not surprising that most of the data for the model can be objectively measured. Indeed, the reason for his selection of a five year period of earnings forecasts may well stem from his desire to minimize the extent of estimates in the model. These earnings estimates appear to represent the only major problem of data collection. The economy-wide rate of return should be readily available since it merely involves an aggregation of data already in traditional accounting reports.

In passing, it should be mentioned that Hermanson has also proposed a model to value the total unowned resources of a firm.⁶⁰ This

⁶⁰Ibid., pp.7-15.

measure is based on the capitalization of the difference between the firm's actual net income after taxes and so-called normal net income which is computed by applying the economy-wide return on owned assets to the average value of the firm's owned assets. Such an amount may thus be negative, zero, or positive. Detailed consideration of this model was excluded on the grounds that it attempts to measure much more than the value of the firm's internal human resources. In fact, the model attempts to measure ". . . all scarce resources operating in the entity that are not owned".⁶¹ However, it does raise the question of whether it is possible to separate the value of the firm's internal members from other components of what is commonly referred to as goodwill.

TRANSFER PRICING: HEKIMIAN AND JONES

The basic thrust of this model is to harness market forces within the organization in order to establish the opportunity cost of employees. The authors draw on John Dearden's notion that assets have value only when there is an alternative use for them.⁶² This "opportunity cost" seems to be viewed by the authors as the same thing as "current economic value".

Hekimian and Jones propose that all investment centre managers should bid for any scarce employee they want.⁶³ The successful bidder

⁶¹Ibid., p.5.

⁶²J. S. Hekimian and C. H. Jones, "Put People on Your Balance Sheet"; Harvard Business Review, (Jan. - Feb., 1967), p.108.

⁶³Ibid.

would include the bid price in his investment base.⁶⁴ The benefit to the winning bidder is the increased "profit" he can earn with the services of that scarce employee.⁶⁵

The model thus requires the establishment of profit centres in the organization. In addition, so that total return on investment can be evaluated on a common base, the "current economic value" of physical assets must be estimated.⁶⁶ This is necessary in order to facilitate the preparation of bid prices to meet targeted overall return on investment for each profit centre.

Analysis

The model represents an ingenious attempt to determine a "market" assessment of value of the firm's employees. Though many other writers have noted the desirability of such a market measure, they have typically abandoned hope of finding one. The following critique should be viewed in this light, namely, that a current market assessment is potentially the most valid surrogate of net present value.

The most apparent weakness of the model centres around the targeted return on investment computation, the basis of the bid prices. Dealing with the numerator first, a major problem exists in estimating the incremental "profit" to be gained from the addition of one or more scarce employees to the profit centre. In addition, the authors do not specify how "profit" is computed. If we assume that they refer to

⁶⁴Ibid.

⁶⁵Ibid.

⁶⁶Ibid., p.109.

traditional accounting profit, then clearly this measure is subject to diverse accounting procedures. Moreover, traditional accounting profit does not necessarily reflect value increases (in this case, the value of increased productivity occasioned by the addition of one or more employees).

Turning now to the "investment" component, the model assumes that the "current economic value" of physical assets can be determined. At best, profit centre managers might obtain a market assessment of the net present value of these assets. Even if this is available, an allocation problem exists where an asset is shared by more than one profit centre.

Looking at the return on investment computation as a whole, certain other potential weaknesses become apparent. Since only one rate of return is used as the basis for the bid prices, the model assumes a fixed future relationship between "profit" and "investment". In addition, Hekimian and Jones appear to inhibit the free operation of market forces by designating the target return on investment for each division to be that ". . . which is established by the president of the company".⁶⁷ This may not necessarily be the same thing as the expected actual rate of return. For example, it can be observed in many organizations that top management typically imposes an arbitrary, rule-of-thumb targeted rate of return on divisions, at best based on average past, or recent past performance.

At least two additional limitations remain. First, only in exceptional circumstances would the model provide a valuation for the firm's total human resources. In view of the opportunity cost notion of

⁶⁷Ibid.

value adopted by the authors, employees of the type that can be hired readily from outside the firm are not regarded as scarce resources, and therefore are not included in the bidding procedure. Thus a zero value would be placed on all employees who have not been the subject of bidding within the organization, a highly unrealistic assumption in terms of our normative definition of human capital value.

The second point refers to the continuing validity of human asset values as determined by the model. Although the authors recognize this weakness,⁶⁸ they do not suggest a procedure to take account of changes in value subsequent to the establishment of the transfer price.

In order to implement the model, the organization would need to establish two or more profit centres. The main data collection problems have to do with obtaining the required return on investment estimates, i.e., forecasting future "profit" and determining the "current economic value" of physical assets. The problem of allocating joint costs to divisions has already been mentioned and requires no further amplification here other than to say that such allocations are necessarily arbitrary. Finally, there appear to be some potential problems in implementing the bidding procedure, but these have to do with the cognitive impact of the procedure and discussion of them is deferred to chapter VI.

SUMMARY AND CONCLUSIONS

This chapter has dealt with the problem of obtaining a dollar measurement of the net present value of the organization's internal

⁶⁸Ibid., p.111.

human resources. In view of the current state of knowledge, it was deemed impossible to obtain a principal measure of value. A search of the literature revealed several models which can provide surrogate measures. These models were reviewed in the light of (a) the apparent validity of resulting measures as surrogates of value, and (b) the practical problems of implementation.

It was found that limitations in the scope of at least two of these models may prevent the determination from the model per se of a surrogate measure of net present value of the firm's total human resources. The Lev and Schwartz model purports to measure gross value only, and Flamholtz' model is aimed at measuring the positional replacement cost of a single position holder, assuming all other position holders in the organization constant. A question can also be raised with respect to the scope of Hekimian and Jones' model in that zero value is placed on all employees who have not been the subject of their proposed bidding procedure.

All of the models were found to be deficient with respect to the apparent validity of resulting measures as surrogates of value. In addition, all were found to have potential and actual data collection and implementation problems. Both of these problems can be said to stem from the need for estimation. However, from the analysis, it seems reasonable to generally conclude that the models reflect an inverse relationship between their apparent validity and the ease of implementation. For example, because they largely rely on historical, verifiable data, the "Barry" and Hermanson models may have fewer implementation problems. (The "Barry" model has, in fact, been implemented). However, they may be conceptually inferior to the other models.

The question of how closely these surrogate measures correspond

to the true economic value of human resources remains one for future empirical consideration. A first step in this direction was recently taken by Flamholtz.⁶⁹ In a study conducted at the same research site as his replacement cost experiment, he found that replacement cost, compensation (salaries) and performance measures (sales volume) each possess convergent and discriminant validity as surrogates of an individual's value to an organization.⁷⁰ Convergent validation refers to the confirmation of a new measure of a given construct through assessment of its agreement with independent measures of the same construct.⁷¹ Discriminant validation refers to the test of the independence of a measure with respect to other measures from which it is intended and expected to differ.⁷² Kendall's rank order co-efficient of correlation was selected as the vehicle for this criterion validation.⁷³ Although it would be foolish at this stage to generalize from the results of this single study, it appears that this type of research should receive high priority with respect to the measurement methods reviewed in this chapter.

⁶⁹E. G. Flamholtz, "The Theory and Measurement of an Individual's Value to an Organization", Unpublished Ph. D. Dissertation, University of Michigan, 1969.

⁷⁰Ibid., pp.66-113.

⁷¹Ibid., p.68.

⁷²Ibid.

⁷³Ibid.

CHAPTER V

METHODS OF MEASUREMENT: NON-DOLLAR

INTRODUCTION

This study assumes the position that a dollar measure of the net present value of the organization's human resources is the ultimate measure to be striven for from the point of view of users of information both internal and external to the organization. The measurement methods to be reviewed in this chapter are also ultimately aimed at providing such a monetary measure. Both models take a behavioural science approach to the measurement problem. This involves the measurement of attitudinal variables. At present, there is no known way of converting attitudinal measurements into dollar amounts. Indeed, the validity of attitudinal measures per se can be questioned on the grounds of the subjective nature of measurement techniques.

The models to be described in this chapter are at a different stage of development. One (Likert's) can be regarded as being operational to the extent of providing social psychological measures of human organizational condition. The other (Flamholtz') is not yet operational since it purports merely to identify the social, psychological and economic determinants of a person's value to an organization. It does not yet prescribe the appropriate measurement techniques to apply to these determinants.

With this in mind, a critique is presented having regard to (a) the apparent validity of the variables of each model as determinants of the human organization's value, and (b) the apparent validity of Likert's social psychological measurement data in reflecting human organizational

condition.

SOCIAL PSYCHOLOGICAL MEASURES: LIKERT

The theoretical framework underlying Likert's model was developed in his book, The Human Organization: Its Management and Value.¹ In brief, the model attempts to describe the relationship between the system of management used by a firm (system 1 - authoritative through system 5 - participative) and the resulting productivity of the organization. Likert identifies three classes of variables which determine the productive capability (and thereby reflect the value) of the human organization:²

1. Causal variables are independent variables which can be directly or purposely altered or changed by the organization and its management and which, in turn, determines the course of developments within an organization.
2. Intervening variables reflect the internal state, health, and performance capabilities of the organization, e.g., the loyalties, attitudes, motivations, performance, goals and perceptions of all members and their collective capacity for effective action, interaction, communications, and decision making.
3. End-result variables are dependent variables which reflect the results achieved by that organization, such as its productivity, costs, scrap loss, growth, share of the market, and earnings.

A schematic diagram of the relationships among these variables

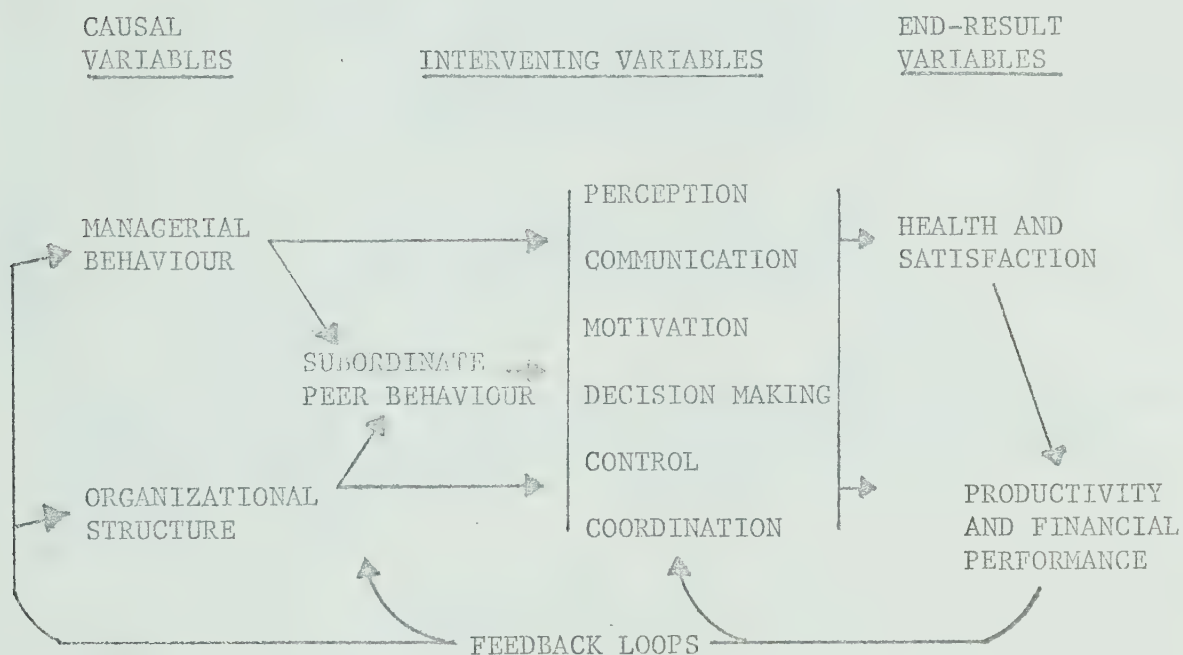
¹R. Likert; The Human Organization: Its Management and Value, (New York: McGraw-Hill Book Co., 1967).

²Ibid., pp.26-29.

is shown in Figure III.³

Figure III

SCHEMATIC RELATIONSHIPS AMONG CAUSAL, INTERVENING,
AND END-RESULT VARIABLES



In order to present a clearer picture of these interrelationships, a simplified example of the way in which the model works is portrayed in Figure IV.⁴

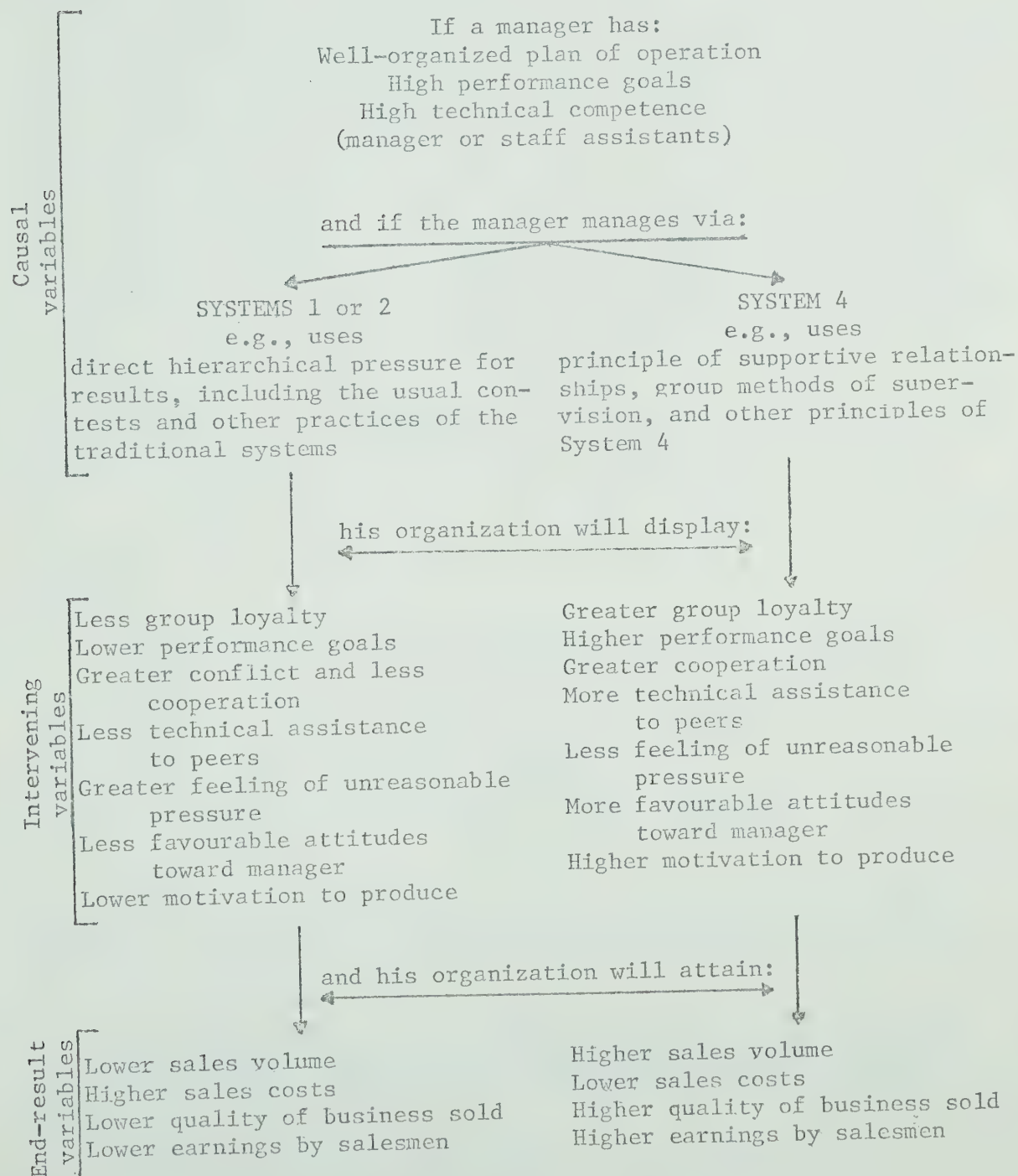
Likert believes that the causal and intervening variables describe the condition or "health" of the internal human organization. He has developed a technique for measuring these variables. Employees are

³R. Likert, D. G. Bowers, and R. M. Norman, "How to Increase a Firm's Lead Time in Recognizing and Dealing with Problems of Managing its Human Organization", Michigan Business Review, (Jan., 1969), p.14.

⁴Likert, The Human Organization. . . , Op. Cit., p.76.

Figure IV

SEQUENCE OF DEVELOPMENTS IN A WELL-ORGANIZED ENTERPRISE
AS AFFECTED BY USE OF SYSTEM 2 OR SYSTEM 4



provided with a questionnaire, answers to which are given by checking one of five possible responses which are assigned values ranging from one to five. This questionnaire is aimed at measuring their perceptions, motivations and attitudes. The responses are then averaged to construct a numerical score on the five-point scale.⁵

Likert ultimately believes that if the hypothesized relationships among his three types of variables can be validated, then ". . . by using appropriate statistical procedures, it will be possible to estimate the productive and earnings capacity of any profit centre, or smaller unit, based upon its present scores on the causal and intervening variables".⁶ Such an estimate can presumably form the basis of a monetary measure of the value of the firm's human resources. In the meantime, periodic measurement of causal and intervening variables can reflect trends in the condition of the human organization.

Analysis

Likert's work is useful in that it does provide a framework that can be used as a model of a group's value to an organization. However, the validity of the model's hypothesized determinants is not yet established. Subject to this validation, several limitations are apparent.

First, it is not clear that Likert has isolated all of the determinants of the value of an organization's human resources. As Elias,

⁵R. Likert and W. C. Pyle, "Human Resource Accounting: A Human Organizational Measurement Approach", Financial Analysts' Journal, (Jan. - Feb., 1971), p.79.

⁶Likert, The Human Organization. . . , Op. Cit., p.150.

Flamholtz and Kretschmar quite correctly point out, the model was not explicitly designed to do this.⁷ In fact, the initial impetus for the development of the model came from Likert's desire to show the effects of different management styles.

Second, many of the variables of the model are not well-defined. For example, "perception" is specified by Likert as an intervening variable, yet all of the intervening variables are measured in terms of perceptions. Likert thus seems to confuse the property to be measured with the method of measurement.

Finally, the relationships among the variables in the model are not yet validated. This limitation stems from the lack of consistent findings in the underlying behavioural science disciplines. The behavioural literature is replete with disagreements as to the relationships among leadership styles, employee attitudes and productivity.⁸ Likert is naturally well aware of this, but defends his model on the grounds that those studies which have generated findings inconsistent with his hypothesized relationships have failed to adequately take account of the time factor.⁹ In a recent longitudinal study, he reported a positive correlation between measurements of managerial behaviour and monthly performance measured one year later. Results

⁷E. G. Flamholtz, N. Elias, and C. G. Kretschmar, "Behavioural Aspects of Human Resource Accounting", Unpublished Working Paper for American Accounting Association Sub-committee on Human Resource Accounting, 1972, p.5.

⁸For example, witness the caustic exchange between Becker and Green, and Stedry, reported in W. J. Bruns and D. T. DeCoster, eds., Accounting and Its Behavioural Implications, (New York: McGraw-Hill Book Company, 1969), pp.327-356.

⁹Likert, The Human Organization. . . , Op. Cit., pp.78-79.

over a two year period indicated an even stronger relationship.¹⁰ In addition, positive results were obtained with respect to the hypothesized relationships between certain causal and intervening variables when the latter were measured one year later.¹¹

It should be stressed that these results were obtained on the basis of a study at one research site. To the best of this writer's knowledge, no attempt was made to use random methods in selecting the site. It is possible that similar research in a different organization would not provide positive results. Thus, the inevitable conclusion to be drawn from this analysis is that further research is required in different organizational settings. One is inclined to agree with Rappaport's observation that ". . . the relationships among key variables influencing behaviour are not uniform in different organizational settings".¹²

Turning now to consider Likert's method of measuring causal and intervening variables, it can be argued that any attempt to measure such attributes will necessarily yield inexact and imprecise results. This is so because of the ill-defined nature of the variables, the lack of objective evidence in substantiating the measures, the averaging procedure employed with respect to organizational groups, and the fact that the technique provides only a relative (as opposed to absolute) measure of human organizational condition. On the other hand, whilst even Likert would probably agree that inexact measures are inevitable, this

¹⁰Likert and Pyle; Op. Cit., pp.79-80.

¹¹Likert, Bowers, and Norman; Op. Cit., p.17.

¹²A. Rappaport, ed.; Information for Decision Making, (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1970), p.403.

is not to deny that the technique might provide reasonable approximations of organization condition. Likert first designed his questionnaire technique in 1932. It seems reasonable to believe that it has since undergone considerable refinement such that the questions are relatively free of built-in bias.

DETERMINANTS OF VALUE: FLAMHOLTZ

Drawing upon psychological, sociological and economic concepts, Flamholtz has attempted to develop a framework for understanding the factors comprising and influencing an individual's value to an organization. His original model, which was amended subsequent to empirical testing, is shown in Figure V.¹³

The model's variables are defined as follows:

1. "Expected realizable value" is the ". . . present worth of the set of future services an individual is expected to provide during the period he is anticipated to remain in an organization".¹⁴ This value is the product of the individual's conditional value and the probability that the individual will maintain his expected service life.

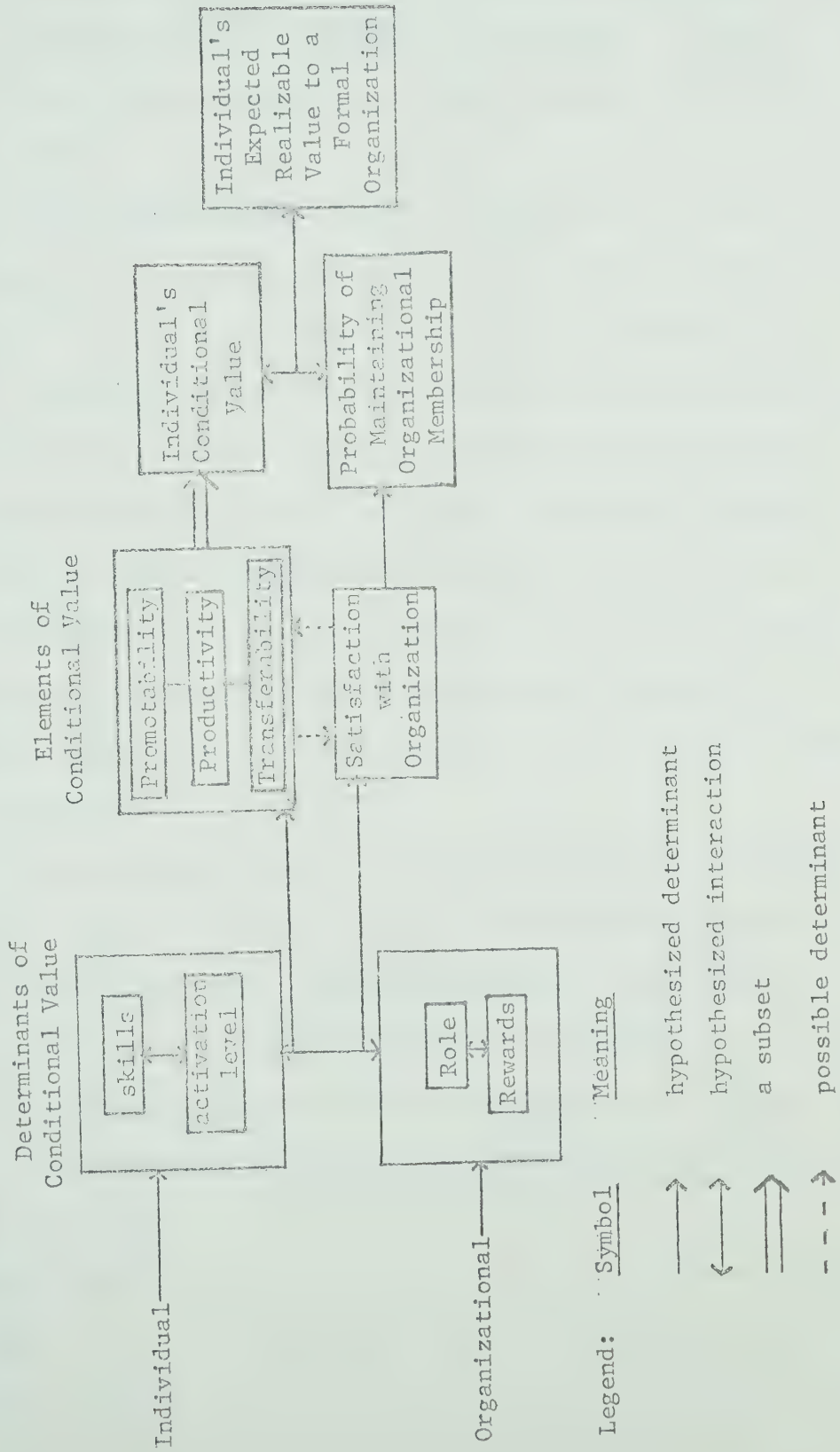
2. "Conditional value" is the ". . . present worth of the potential services that are expected to be rendered to the organization, if

¹³E. G. Flamholtz, "Toward a Theory of Human Resource Value in Formal Organizations", Unpublished Working Paper No. 71 - 1, Accounting Information Systems Research Program, Graduate School of Business Administration, University of California, Los Angeles, March, 1971, p.5.

¹⁴E. G. Flamholtz, "Assessing the Validity of a Theory of Human Resource Value: An Exploratory Field Experiment/Study", Unpublished Working Paper No. 71 - 4, Accounting Information Systems Research Program, Graduate School of Business Administration, University of California, Los Angeles, April, 1971, p.4.

Figure V

MODEL OF THE DETERMINANTS OF AN INDIVIDUAL'S VALUE TO A FORMAL ORGANIZATION



an individual maintains membership in the organization throughout his expected service life".¹⁵

3. "The probability of maintaining organizational membership" is the ". . . complement of the probability of turnover. It determines the extent to which the organization will realize the individual's conditional value".¹⁶

4. "Conditional value" is a ". . . multi-dimensional variable, and is comprised of three factors: productivity, transferability, and promotability. 'Productivity' refers to the set of services an individual is expected to provide while occupying his present position. 'Transferability' is the set of services an individual is expected to provide if and when he transfers to the other positions at the same position level in a different promotion channel, e.g., a transfer from an entry level marketing position to an entry level finance position. 'Promotability' represents the set of services the individual is expected to provide at higher level position in his present or different promotion channels".¹⁷

5. "The individual determinants of conditional value" are the ". . . aptitudes and characteristics which influence the elements of a person's conditional value. The major individual determinants of conditional value are the person's skills and activation level". The individual's technical, administrative and interpersonal "skills" represent the currently developed potential to provide services to an

¹⁵Ibid., p.5.

¹⁶Ibid.

¹⁷Ibid., pp.5-6.

organization. "Duffy (1962) has defined the term 'activation level' as '. . . the extent of release of stored energy of the organism through metabolic activity in the tissues.' It is, in other words, the neuro-psychological counterpart of the notion of motivation".¹⁸

6. "Organizational determinants of conditional value" are ". . . dimensions of the organization which influence the elements of a person's conditional value. The major organization determinants of conditional value are the individual's role and organizational rewards. A 'role' refers to the set of behaviours expected of all persons occupying a specified position in an organization. 'Organizational rewards' refer to the benefits which people expect to derive from different aspects of their membership in an organization, related to their efforts and their membership".¹⁹

7. "Satisfaction with the organization" refers to the ". . . degree of satisfaction of certain personal needs derived from aspects of membership in the organization. It influences the probability that an individual will remain in an organization".²⁰

Flamholtz conducted an exploratory "field experiment/study" in an attempt to determine whether personnel managers actually used the model's variables in assessing the value of individuals to the organization. The study was conducted in a large C.P.A. firm in a major city of the

¹⁸Ibid., p.6.

¹⁹Ibid., pp.6-8.

²⁰Ibid., p.8.

United States.²¹

Two members of the personnel department were selected and given the task of independently rank ordering 39 staff accountants by the alternation ranking method according to three criteria: expected positional value, expected conditional value, and expected realizable value. The agreement between the subjects on all value dimensions was moderate, ranging from .61 to .68.²²

The second part of the experiment was conducted two weeks later when the two personnel managers were asked to come to agreement on their ranking. Flamholtz reasoned that differences between the subjects' opinions would be exposed, thus arousing cognitive dissonance, and, in turn, stimulating dissonant reducing behaviours (including information-search behaviour) which would expose the managers' underlying value systems and reveal the determinants of individual value.²³

Content analysis was performed on the recorded discussion. All of the variables hypothesized to influence an individual's value, except organization rewards, were observed to be used by the subjects in their assessments. Some of the other determinants were observed only a few times (e.g., motivation, satisfaction and transferability). Four additional factors were identified, however. These were "attitudes", "abilities", "traits", and the "the individual's manager".²⁴

²¹Ibid., p.9.

²²Ibid., p.16.

²³Ibid., p.23.

²⁴Ibid., p.36.

"Attitudes" was vaguely defined, but appeared to relate to aspects of the work situation and the organization. "Abilities" referred to intellectual capability or "native" intelligence. "Traits" refer to aspects of an individual's personality. Finally, the potential worth of some individuals was felt to be influenced by the managers by whom they were supervised.²⁵

The model was consequently revised as shown in Figure VI.

Analysis

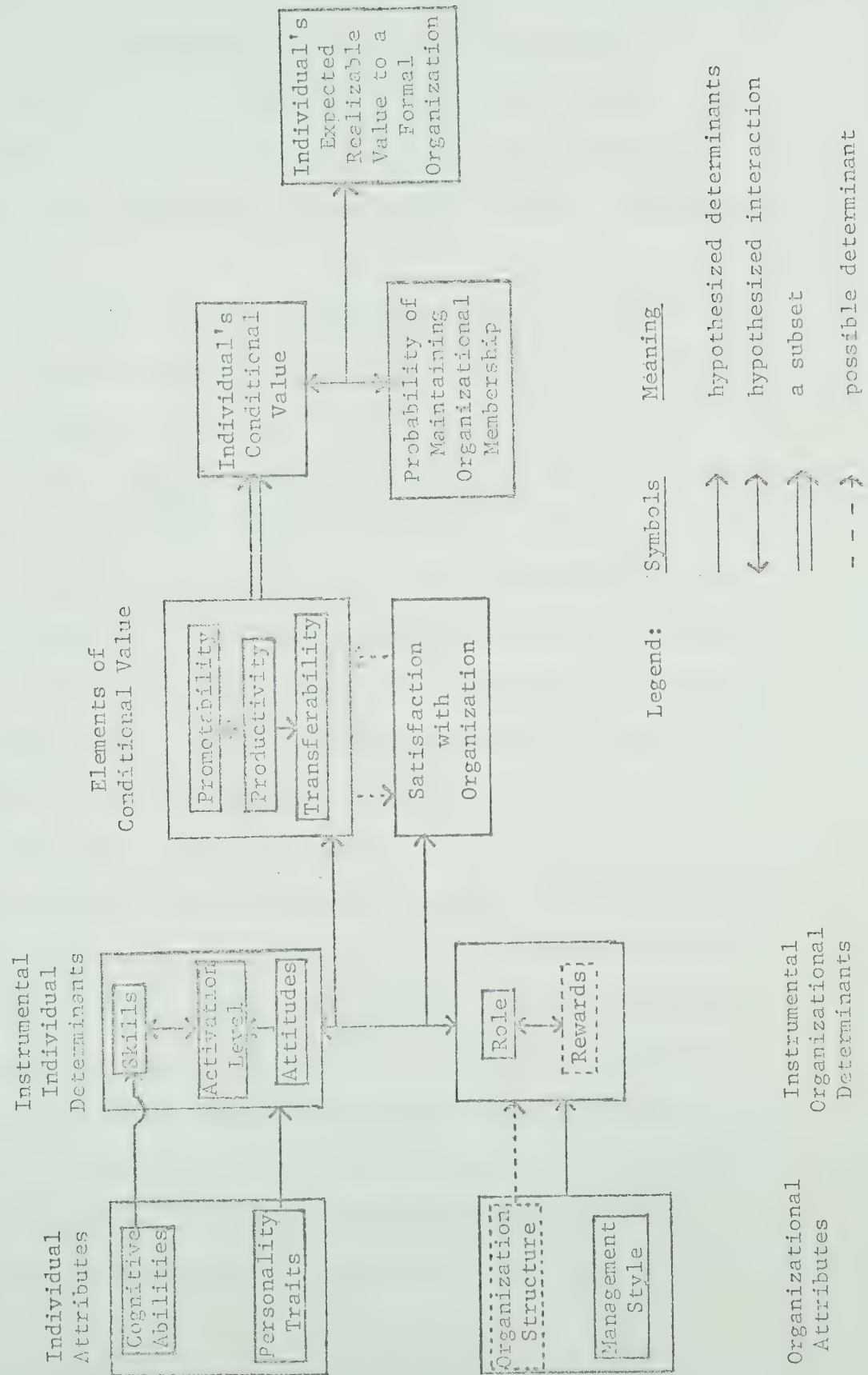
Flamholtz' model cannot yet be described as an operational method of measurement. It ultimately aims to provide a dollar measure of a person's "expected realizable value" to an organization. This appears to be akin to the economic notion of net present value. However, there is some confusion at this stage as to how Flamholtz proposes to obtain this measure. Does he propose to use a social psychological measurement technique such as Likert's and then attempt to find a way to convert resulting measures into monetary form? Or does he suppose that the model can eventually provide a direct dollar measure of the value of the future service contributions (productivity) of organization members? This issue is not clear, but in view of the socio-psychological nature of his hypothesized basic determinants, the former seems more likely.

Allowing that this problem stems from the embryonic stage of development, it can be argued that the model has more potential than Likert's to eventually provide a complete measure of human resource value to the organization. This is possible because the model was specifically designed to isolate all of the determinants of an individual's value.

²⁵Ibid., pp.36-37.

Figure VI

REVISED MODEL OF THE DETERMINANTS OF AN INDIVIDUAL'S VALUE TO A FORMAL ORGANIZATION



These determinants relate both to the personal attributes that an individual brings to an organization as well as to the organization attributes which influence an individual's performance therein. Likert, on the other hand, sees the latter only (through the organization's structure and system of management) as the basic (causal) determinants of value.

Although Flamholtz appears to have undertaken a fairly comprehensive review of the behavioural literature in structuring his model, the behavioural concepts embodied in it are very generally described. As noted by Flamholtz, Elias, and Kretschmar, it may be possible to identify specific behavioural concepts which are more basic to the model.²⁶ They suggest, for example, that certain psychological and sociological concepts such as learning theory, the theory of human adaptability, the theory of creativity, and the concept of intelligence should be investigated for their possible relationship to value.²⁷ In fact, the latter concept is included in the revised model under "cognitive abilities".

The validity of the revisions to the original model is also open to question. First, the sample size of personnel managers involved in the exploratory study was small (n=2). Second, it is not clear that these personnel managers were in the best position to determine those factors which reflect the value of employees to the organization. It is probable that certain line personnel (such as immediate supervisors) are in a better position to assess these factors because of their proximity to the work situation. Finally, the study dealt with only one

²⁶Flamholtz, Elias, and Kretschmar, Op. Cit., p.11.

²⁷Ibid.

organization, a C.P.A. firm. It is possible that a similar study in another organizational setting would result in a different set of amendments to the model.

The inevitable conclusion is that the model is extremely tentative at this stage. Even if we assume that Flamholtz has generally described all of the determinants of an individual's value, there remains the problem of establishing a cause-and-effect relationship between these determinants. At present, the model is not explicit in this regard. Many of the variables are seen to interact, but not to explain.

SUMMARY AND CONCLUSIONS

The models reviewed in this chapter take a behavioural science approach to the problem of human resource measurement. While both ultimately aim to provide a dollar measure of the value of the firm's human resources, neither is capable of generating such a measure at this stage. However, the Likert model can provide social psychological measures of human organizational condition. It is assumed that Flamholtz intends to utilize a similar measurement technique for his model, although he has merely concentrated to date on the identification of the determinants of an individual's value to an organization.

A critique of the models was presented having regard to (a) the apparent validity of the variables of each model as determinants of the value of the human organization, and (b) the apparent validity of Likert's social psychological measurement data in reflecting human organizational condition. The following general conclusions can be inferred from this analysis.

First, it is not clear that either of the models identified all of

the determinants of human organizational value. In this regard, the Flamholtz model may be more complete since it was specifically designed to do this. It recognizes the attributes which the individual brings to the organization whereas Likert sees only organization attributes as the basic determinants of value.

Second, the variables of each model are not well-defined. Moreover, the relationships among the variables are not yet clearly established, especially in the Flamholtz model. This can be attributed largely to inconsistent findings in the underlying behavioural disciplines. In defence of his own model, Likert claims that those studies which have generated findings inconsistent with his hypothesized relationships have failed to recognize the time factor. This, however, may not be the critical factor accounting for inconsistent findings. The answer may be deceptively simple, namely, that the relationships among behavioural variables are not uniform in different organizational settings.

Third, there appears to be good reason to question the value of the empirical studies done subsequent to the initial development of each model. Since Likert presumably did not use random methods in selecting his research site, the positive results he obtained in attempting to validate his hypothesized relationships must be viewed with caution. Similarly, the two personnel managers utilized as subjects in Flamholtz' study may not have been in the best position to assess the value determinants of the firm's employees.

Finally, there is little argument that Likert's social psychological measurement techniques can at best provide inexact and imprecise measures of human organizational condition. However, having regard to Likert's long experience in administering the questionnaires, it is

possible that the technique does provide a reasonable approximation of human organizational condition insofar as Likert has identified the relevant variables which affect that condition.

CHAPTER VI

THE ISSUES FOLLOWING IMPLEMENTATION

INTRODUCTION

The work at R. G. Barry Corporation in the United States represents the only major attempt to implement an ongoing system to accumulate value-related data with respect to a firm's human resources. However, even in this study there has been no systematic attempt to determine the impact of such data. This chapter examines three major issues which must eventually be faced should human resource measurements become a universal reality. We can do no more than raise the issues and offer some conjectures at this point.

The first issue relates to the cognitive impact. This refers to the impact on management's thinking about people as resources, and to the attitudes of employees to the notion of treating them as assets in much the same way as physical assets. The second issue relates to the actual usefulness of the data. More specifically, will decisions be made differently if human resource measurement data are available as decision inputs? If so, to what extent? The third issue is somewhat related to the first two. It refers to the question of whether the benefits (if any) from human resource measurement data outweigh the costs of obtaining them.

COGNITIVE IMPACT

It seems reasonable to believe that the formal treatment of people as resources will affect management's thinking. The impact may be especially felt by personnel managers, who have for some time been

insisting upon some "hard data" to aid their decisions. As noted by Kelley, the personnel manager is prone to "feel" his way through a series of familiar activities - employment, job evaluation, employee activities, benefits, training and union relations.¹ Human resource measurement data can thus be expected to make his life a good deal easier.

Flamholtz has also predicted a change in management's thinking. He observes that in current business practice, task design, selection, role assignment, development, performance appraisal and compensation are a set of service functions to be performed. When measures of human resource value are available, he contends that these "service functions" will be thought of as a set of available strategies that can be adopted to change the value of human assets, and, in turn, the value of the organization as a whole.²

Robert Wright has also conjectured on the behavioural implications. He feels that line managers will be provided with greater incentive to develop the human resources under their control. At present, line managers tend to concentrate on operative and administrative matters because, under traditional accounting procedures, they are held responsible for controlling operating costs, but not human investments.³ In addition,

¹R. T. Kelley, "Accounting in Personnel Administration", Personnel Administration, (May - June, 1967), p.28.

²E. G. Flamholtz, "A Model for Human Resource Valuation", The Accounting Review, (April, 1971), p.267.

³R. Wright, "Managing Man has a Capital Asset", Personnel Journal, (April, 1970), p.294.

Wright anticipates that greater care will be taken to assure that employees are assigned to jobs they are capable of filling. Promotion policies, he states, would no longer be based on seniority rules. Job requirements would be matched with personnel capabilities as measured by the human resource measurement system.⁴ Finally, Wright believes that the treatment of employees as valuable resources will lead to different decisions when personnel problems occur. For example, if an employee is ineffective in his position, the immediate reaction will not be to demote or fine the individual, but to correct the condition so that a maximum return on investment can be realized.⁵

With the possible exception of the last conjecture (it may be more rational to view the investment in an ineffective employee as a "sunk cost" and therefore replace him, depending, of course, on a comparison of the expected future returns of the original employee and his replacement), these changes in management thinking seem quite conceivable. It now remains to consider the likely cognitive impact with respect to those who are being "measured".

It seems inevitable that some people will object to being thought of as assets, especially when an attempt is made to place a dollar value on them. Some of the ideological objections to the concept of human capital were discussed in chapter II, although these appear to have diminished in recent years.

The experience at the R. G. Barry Corporation indicates that people are not offended by the idea of being measured. At least this was the view of the personnel manager when questioned at a symposium at

⁴Ibid., p.295.

⁵Ibid., p.297.

Ohio State University in 1968.⁶ However, this observation must be regarded with scepticism for a couple of reasons. First, the personnel manager's view may not be an accurate reflection of the inner feelings of those employees being measured. Second, even if the manager's view was correct, any irritation may have been outweighed by the pride of the group in participating in something new and to which a fair amount of publicity has been given in business and academic journals.

A review of the other measurement models proposed in this study reveals one in particular which may draw considerable protest. The bidding procedure suggested by Hekimian and Jones may be offensive since there is a direct attempt to simulate the market place. Presumably, a sealed bid procedure would be less offensive than an open auction in this regard.

In conclusion, although it seems probable that some people will react negatively to being treated as assets, there does seem to be a way of lessening the effects of this. This would involve an attempt to obtain the participation and acceptance of all personnel involved, and to solicit their suggestions and ideas. On the other hand, a unilaterally imposed system would appear to portend a much greater amount of dissension.

ACTUAL USEFULNESS: DECISION MAKING

To this writer's knowledge, there has been only one completed attempt to empirically test the utility of including human asset accounting data in financial statements. In a recent doctoral dissertation at

⁶Reported in T. J. Burns, (ed.); The Behavioural Aspects of Accounting Data for Performance Evaluation, (Columbus: College of Administrative Science, The Ohio State University, 1968), p.41.

the University of Minnesota, Nabil Elias conducted a field experiment which focused on three related questions:⁷

1. Will the reporting of human assets in financial statements on the historical cost basis cause investment decisions to be different?
2. When human assets are reported in financial statements, will investment decisions be the same for different groups with different levels of sophistication in accounting and different orientations?
3. Related to the previous question, what are the background or moderating variables that may cause decisions to be different?

Subjects included Chartered Financial Analysts, other Financial Analysts, Certified Public Accountants, and various student groups with differing degrees of accounting knowledge. The experimental problem involved a choice between two companies as an investment. The experimental procedure involved manipulation of different treatments of information about human assets:⁸

1. Conventional - These statements were prepared according to presently accepted accounting conventions which ignore human assets.
2. Human Assets - These statements reflected human asset accounting procedures based on the "Barry" model and treated outlays on human resources as assets.
3. Combined - These statements presented both the conventional and human assets treatments separately, but as a set of statements.

Elias found that the inclusion of the human asset data did tend to affect the decisions of some subjects (especially C.P.A.'s and the

⁷N. Elias, "The Impact of Accounting for Human Resources on Decision Making: An Exploratory Study", Unpublished Ph. D. Dissertation, University of Minnesota, 1970, p.8.

⁸Ibid., p.10.

Financial Analysts) but not others (the students and Chartered Financial Analysts). The difference among groups was not significant at the preselected .05 level. Although the differences among decision outputs were significant at the .02 level, Elias also measured the strength of the relations among the variables by the contingency co-efficient and found that it was not very strong. Finally, the attempt to identify background variables that might explain differences in decisions produced no significant results.⁹

The study thus produced mixed results. Although there was no theoretical basis for explaining why human resource accounting data affected some decision makers but not others, Elias conjectured that the C.P.A.'s, who had the highest measure of association, were either more aware of the limitations of traditional financial statements, or, though they may be hesitant in providing such data, they themselves would like to receive it.¹⁰ It was interesting to note that the Chartered Financial Analysts, perhaps the main users of financial accounting information, were least affected by the human asset data.

The only possible conclusion is that the issue which Elias investigated remains unresolved. Moreover, the scope of the study was limited in that it examined the relevance of historical cost data only, and then only insofar as this data affected an investment decision. Further, the subjects of the study were proxies for real decision makers. Their decision behaviour may not necessarily correspond to that of actual investors. Thus, the question of whether human resource measurement data does make a difference to decisions remains one for

⁹Ibid., p.108-110.

¹⁰Ibid., p.115.

future research.

THE BENEFIT-COST QUESTION

This question obviously presupposes some answers with respect to the first two issues discussed in this chapter. A good deal of difficulty can be anticipated in attempting to quantify some of the intangible behavioural effects of a human resource accounting system. For example, if it is established that some employees are offended by the idea of attaching a dollar value to them, and this, in turn, has adverse motivational implications, a way will need to be found to quantify these effects.

The direct outlay cost of an historical system might not prove too burdensome since much of the data can be obtained from normal accounting information sources. In fact, the personnel manager at the R. G. Barry Corporation estimates that the system there is costing only \$30,000 per annum, and this includes a basic research cost with respect to the University of Michigan's Institute of Social Research.¹¹ Presumably, once the "bugs" are ironed out of the system, this outlay cost can be expected to decrease.

Outlay cost can be expected to be greater where the data are not obtainable through normal accounting information channels. For example, the cost of preparing and administering Likert's social psychological measurement technique, as well as analysing and interpreting the results, may be expected to be relatively high. Even in this case, however, the cost should decrease as the procedure is routinized.

Clearly, the outlay cost component of the benefit-cost question is

¹¹Burns, Op. Cit., p.41.

the one most easily measured. It may also be relatively unimportant when compared to other components which are much less easily quantified.

SUMMARY

This chapter examined three issues which will ultimately determine whether human resource measurement techniques have a place in the information systems of organizations. These issues referred to the cognitive impact of human resource data on managers and employees, the actual usefulness of the data in decision making, and the benefit-cost question.

With the exception of an inconclusive exploratory study by Nabil Elias, there has been no systematic attempt to determine the impact of human asset data on the behaviour of organization members. Thus, the discussion was necessarily limited to some conjecturing on these issues.

It remains to offer some personal opinions on the future of human resource accounting. This writer is sceptical that human resource measurement under conventional accounting practices will make a difference to anyone. It is interesting to note that the proliferation of articles on the anticipated decision making benefits of the Barry Corporation experiment has not been followed up by any indication of the actual usefulness of the data generated by the model. Perhaps it is too soon to tell, but it seems reasonable to believe that after four years of operation, some evidence would now be available in the accounting literature if the data were making a difference to anyone.

We may have to wait until bases other than historical cost are acceptable for reporting purposes before the full impact of conceptually more appealing monetary measures of human resources can be evaluated.

Many accountants believe that a movement toward the reporting of current values of conventional accounting assets will provide more relevant information for decisions. Others believe that the sacrifice of objectivity in doing so will outweigh any possible decision making benefits accruing from such a step. If, as appears possible, current values are eventually reported for conventional accounting assets, then the door may be opened to report other assets which are not legally owned but which have future service potential (and therefore current value) to the firm. Obvious candidates are lease agreements and human resources.

In the meantime, perhaps the most promising prospects for the immediate future of human resource accounting lie in the reporting of non-monetary measures of human organizational condition. Periodic measurements of attitudinal variables might be reported on financial statements along with conventional accounting data. Report users could then draw their own conclusions with respect to the value of the human organization. In fact, this may ultimately prove more desirable than monetary measures if it is found to be impossible to develop and validate a satisfactory surrogate measure of human resource value. Subject to further empirical validation of the relations among its variables, the Likert model might be implemented to provide such non-monetary measures.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY AND CONCLUSIONS

This study addresses the problem of how to properly account for an organization's human component. More specifically, its objectives were

- (1) to examine the economic concept of "human capital", and the accounting concept of "human assets", including theoretical arguments for and against the existence of such property,
- (2) to present the normative definition of the value of an individual to an organization,
- (3) to review the theoretical arguments related to the assumed usefulness of human resource measurement in organizations,
- (4) to present and analyze the methods suggested in the literature for measuring the value of human assets, and
- (5) to examine the issues following the implementation of measurement methods, including the behavioural impact, the actual usefulness of the data, and the benefit-cost question.

Only in recent years have economists begun to incorporate the concept of human capital into their analysis. Prior to the late 1950's, labour was almost universally regarded as a fixed, homogenous factor of production. It is now generally regarded as perhaps the major source of economic growth. While some economists remain sceptical, their objections refer mainly to the doubtful utility of the concept due to measurement problems.

The economic value of an individual may be defined from at least three points of view: that of "society", the individual himself, and the

organization which employs him. Normative definitions were given under each of these circumstances. In an accounting context, the third point of view is probably the most important of the three. The value of an individual to an organization may be defined as the net present value of his expected productivity or service contributions.

The question of whether human capital can be considered an asset in terms of current financial accounting theory was discussed. It was not possible to find one, single universally accepted definition of an asset. Thus, the question was considered in the light of several criteria which appear to represent a concensus of authoritative opinion. It was generally concluded that human resources fail to meet, in all cases, a strict interpretation of these criteria. However, given a more liberal interpretation, persuasive arguments can be made that human resources meet the spirit or intent of the criteria. Moreover, in light of several recent research proposals to expand the boundaries of traditional accounting measurements, it was felt that human resources may well be considered assets in the foreseeable future.

It is widely held that the purpose of accounting is to provide information for decision making. It was therefore deemed necessary to consider the possible decision making benefits of providing human asset information. The general conclusion was that, taken together, the arguments in favour of providing such information represent a strong case. However, it was noted that the implications are much more obvious for human-resource intensive firms. In addition, the utility of human asset data is largely dependent on the development and validation of measurement techniques.

The next step was to consider the measurement problem. Given the

present state of knowledge, it was deemed impossible to obtain a principal measure of net present value in dollar terms. A search of the literature revealed several models which can provide surrogate measures of net present value. These were analysed in terms of (a) their apparent validity in providing surrogate measures of net present value, and (b) their ease of implementation. Several of the models were found to be limited in scope such that they are unable to provide a measure of the net value of the firm's total human resources. In addition, all were found to be potentially deficient in providing surrogate measures of value, and all were found to have potential implementation/data collection problems. Both of these potential limitations stem from the need for estimation. It was generally concluded that the models tend to reflect an inverse relationship between their apparent validity in providing surrogate measures of the true unknown net present value, and their ease of implementation.

Two non-dollar measurement methods were investigated. These take a behavioural science approach to the problem. One (Likert's) can provide social psychological measures of human organizational condition, while the other (Flamholtz') has merely attempted to identify the determinants of an individual's value to an organization. It is assumed that Flamholtz will eventually utilize a measurement technique similar to that of Likert when his model is further developed. A critique was presented in terms of (a) the apparent validity of the variables of each model as determinants of human organizational value, and (b) the apparent validity of Likert's social psychological measurement data in reflecting human organizational condition. The detailed conclusions are set out at the end of chapter V. In general, they indicate that the

relationships among the variables in each model are vaguely defined. This can be ascribed to the lack of consistent findings in the underlying behavioural disciplines.

Consideration of the issues following implementation was necessarily limited to a series of conjectures. It was felt that the provision of human asset data will affect management's thinking such that they will be more concerned with the future impact of their decisions with respect to employees. At present, these decisions are typically taken on an ad hoc basis. Although it is likely that some employees will object to being "measured", it was felt that a participatory approach to the implementation of the measurement system may lessen the extent of any detrimental effects. A study by Elias on whether the provision of historical cost human asset information made a difference to an investment decision was inconclusive. Finally, examination of the benefit-cost question revealed that direct outlay cost may not be too burdensome, especially when data acquisition procedures are routinized and become part of a firm's total information system. However, this component may represent the tip of the iceberg. A way must be found to quantify the behavioural impact of human resource accounting, including decision making benefits (if any). Chapter VI concluded with some personal opinions on the future of human resource accounting.

RECOMMENDATIONS

The idea of human resource measurement in organizations was first conceived about ten years ago. It is probable that most business organizations are not even aware that an alternative accounting treatment of their personnel is possible, or justified. The suggested priorities with respect to the recommendations which follow should

ideally be reversed in sequence. If we had some answers with respect to the benefit-cost question, then obviously we would have grounds for accepting or rejecting an alternative treatment as of now. However, given the embryonic state of current knowledge, the following plan of action is recommended:

1. The first priority should be the development and validation of alternative measurement models, both dollar and non-dollar. Some may argue the folly of proposing a model which is not based on historical cost. However, the impetus for change in the accounting profession should come from within. It is not inconceivable that bases other than historical cost will be acceptable in the future. To this end, it is recommended that accountants become better versed in the economic and behavioural science disciplines. There appears to be scope for improvement on the models proposed thus far.

2. The second priority should be the implementation of the model(s). It will not be possible to draw valid conclusions with respect to the long term behavioural and decision making impact until this step is taken. The question of when and what to implement will be a difficult one. In this writer's view, this question provides an opportunity for professional accounting bodies to exhibit real leadership.

It can be argued that because internal reports are not constrained by generally accepted accounting principles, management is free to implement any of the proposed models immediately. However, management typically follows the lead of professional accounting bodies. Widespread implementation cannot be expected unless these bodies take the lead. In addition, internal reporting will not facilitate an assessment of the full decision making impact of human resource data. Investors,

and other interested parties external to the firm will be denied such information.

3. Ultimately, the benefit-cost question must be addressed.

Answers to this question will not be available for many years to come.

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